

35 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

June 1951



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B.F. Goodrich



S. J. Cohen Construction Co. equipment operating at Morillton, Ark.

Working on the levee with 33-ton loads —this job calls for Super Traction!

WORKING on a levee enlargement job, the bottom-dump Euclid shown above is being loaded with over fifteen cubic yards of fill dirt from a borrow pit. Add an equipment weight of 35,700 pounds and this king-sized load represents a real traction job. When you consider that the thirty-three tons must be worked over soft, sandy loam—you have a job for super traction!

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In addition to a longer-wearing tread compound, all B.F. Goodrich off-the-road tires offer you the exclusive protection of a *nylon shock shield* (double in the larger sizes). Layers of nylon cord are built into the tire between the tread and the rayon cord body. This shields the backbone of the tire against shocks and costly bruise breaks.

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your off-the-road equipment. There's a specially-designed, deep tread for every job.

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Regardless of what size Oliver Industrial Wheel Tractor and Ware Loader you buy . . . "66", "77", "88". . . you get the identical superior design and performance features in each.

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CONSTRUCTION

METHODS AND EQUIPMENT

Volume 33, Number 6

JUNE 1951

Established 1919

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June, 1951

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Vol. 33—No. 6

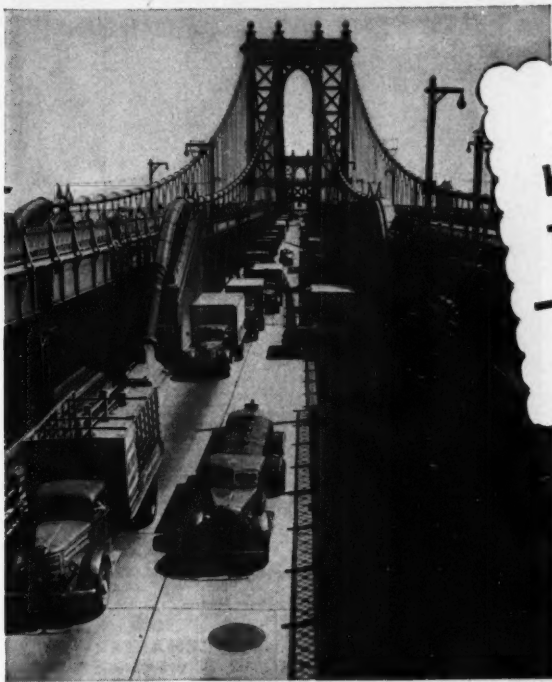
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Manhattan Miracle



**Hard-Driving Program
Helps Cope with World's
Toughest Traffic Problems
— Manhattan Bridge Repaving
an Example**

'Incor' paving on Manhattan Bridge; right, placing concrete while maintaining two-way traffic; below, 'Incor' Air-Entrained Concrete assures long-time, maintenance-free service.



● New York City has just about the toughest traffic problem in the world. But it would be lots tougher were it not for a well-planned maintenance program which keeps everlastingly at the job of making the most of every inch of the existing facilities. Sound selection of methods and materials produces near-miracles in keeping traffic rolling while repairs and improvements are being made.

Sections of Manhattan Bridge's main roadway, carrying the bulk of nearly thirty million vehicles a year which use this famous span, were repaved while maintaining heaviest two-way traffic. Every detail of the job was planned and timed in advance.

Taking full advantage of the dependable *high early strength* of 'INCOR' AIR-ENTRAINING HIGH EARLY STRENGTH PORTLAND CEMENT assured quickest re-use of the new paving. Dependable *high ultimate strength*, in turn, assures long-time, low-maintenance service—shown by many years' 'Incor's' performance on highways in New York City and throughout the nation.

*Reg. U.S. Pat. Off.

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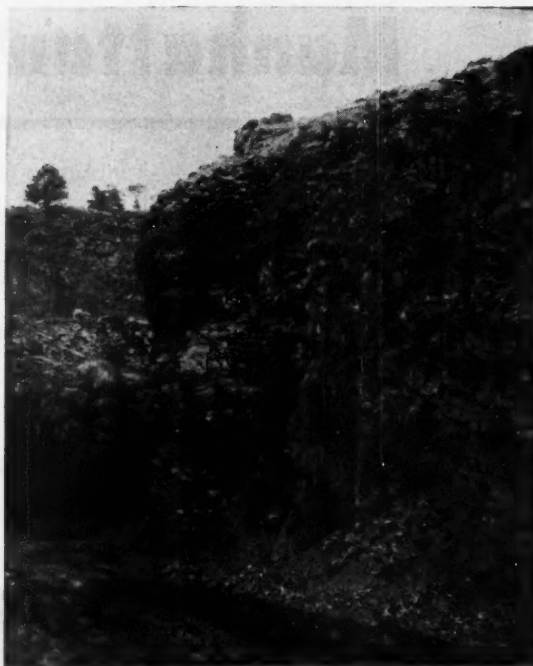
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machine-gun
camera
photos like this
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ROCKMASTER: Reg. U.S. Pat. Off.

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Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
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3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550



What's behind the **Euclid** name?

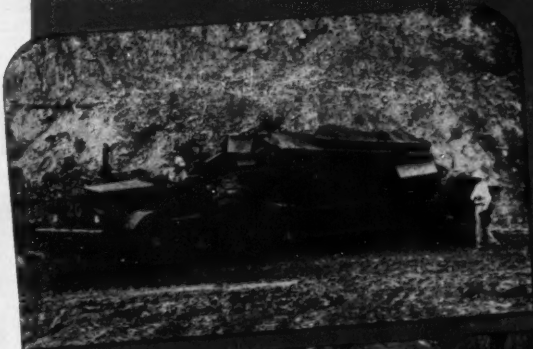
Engineered...for the Job

Of simple design and rugged construction, Euclids are engineered and built specifically for moving earth, rock, coal and ore in off-the-highway service.

There is a Euclid model to meet every requirement in off-the-highway work, and body designs for all types of materials. Capacities of Rear-Dump "Eucs" range from 10 to 34 tons, with diesel engines of 125 to 400 h.p. Top speeds with full payload up to 35.7 m.p.h. . . . semi-rigid or spring mounted drive axle, five or 10 speed transmission.

Bottom-Dump Euclids range in capacity from 13 to 25 cu. yds., have diesel engines of 190 to 300 h.p. . . . top speeds loaded up to 34.4 m.p.h.

Also job proved for high production at low cost are the Euclid Loader and the Euclid Scraper. Write for complete information on the Euclid line of earth moving equipment or call your distributor.



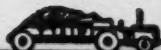
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MORE PROFIT PER LOAD**

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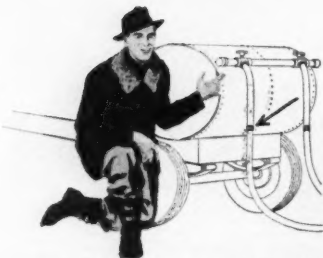
Republic Tips TO AIR HOSE USERS . . .

The simple "do's" and "don'ts", offered here as Republic Rubber tips can help you keep your hose in top working condition . . . capable of giving longer, uninterrupted service at reduced costs.

Your local Republic Rubber Distributor can help you select, apply and properly main-

tain the right product for your particular need. Contact him today.

Remember Republic Rubber has been *the* specialist in the field of Industrial Rubber Products for more than 50 years. Use Republic products and you use the best. Use Republic products *correctly* and you save the most!



Most compressors spit oil and heat in attached air lines. Action of these deteriorating agents can be retarded by use of a short, detachable lead which assumes the brunt of the punishment. Leads are easy and economical to replace. Turning hose end for end also helps by alternating positions of greatest exposure.



Do not allow hose to become kinked or twisted. Although a good hose may show no immediate ill effects, such treatment damages the carcass structure, giving deterioration a good spot to concentrate on.



You can store hose indefinitely if you select a cool, dry place. Wall-hung reels or saddles make ideal hose depositories, providing coils are clean, evenly wound and supported on radii large enough to prevent kinking.



REPUBLIC'S CHAMPION SUPER SERVICE AIR HOSE

Republic's Champion Air Hose is a top-quality, braided hose, combining ruggedness with extreme flexibility and light weight. It's built with a smooth friction-reducing, oil-resisting tube, surrounded by multiple braids of specially processed, chemically strengthened fabric. A thick black, armor-like safety cover wards off destructive blows from falling objects—stands firm against abrasion and wear. Champion Air Hose is supplied in all standard sizes in 50-foot lengths. Consult your Republic Distributor for full facts on this and other money-saving Republic Industrial Rubber Products.



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REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO



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Your Northwest is a proved crane unit—one out of every three Northwest sold is a repeat order to a responsible customer—a guarantee of performance that no other testimonial can equal.

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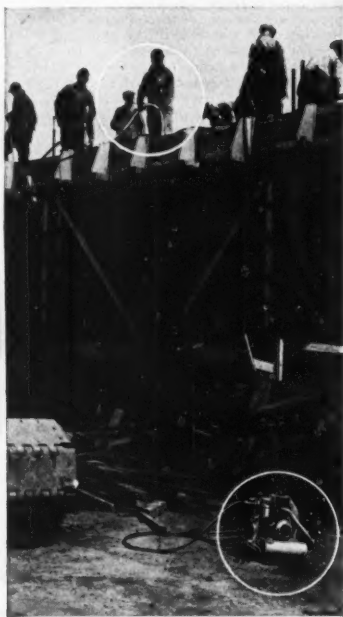
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Homelite Generator on ground powers vibrators on top of forms.



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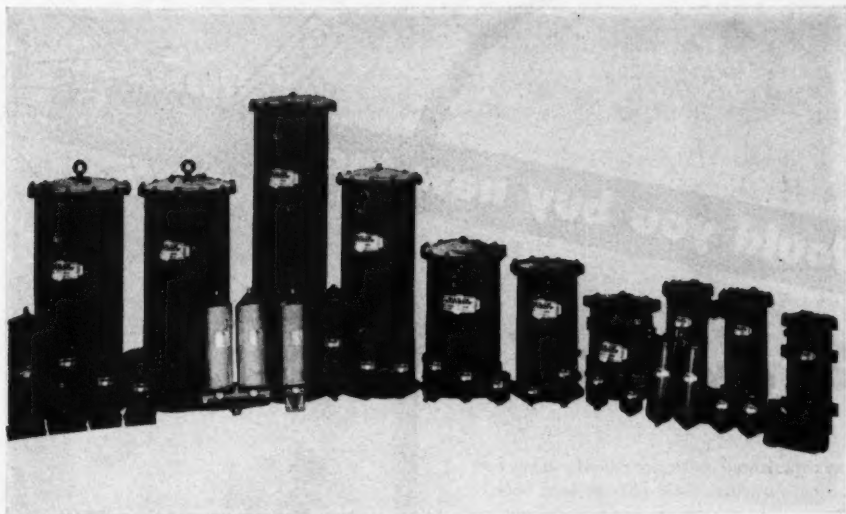
There's no flexible shaft to give trouble. You can bend the tough electric cable—in its neoprene hose handle—around corners or over forms without injuring it. And the extension hose handle permits working 25 feet down in a form. CP-Homelite Hicycle Vibrators run at a constant speed of 10,000 v.p.m., the most suitable frequency for concrete placement and will handle 30 to 40 cubic yards an hour of 2" slump concrete.

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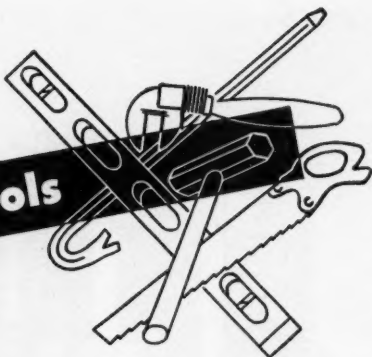
Armco Sheeting is amply strong. You'll find it an ideal choice for shoring trenches, constructing core walls, cofferdams and many other temporary or permanent needs. Write us for complete information. Armco Drainage & Metal Products, Inc., 3461 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

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Red"*



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When the TD-24 teams up with a loading machine, dirt gets moved from ground to trucks in record time. And the "men who move the earth" are finding this out.

Like the D. W. Winkelman Co., Inc. on a job near Syracuse with a TD-24 loading out 22 pay yards every minute.

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INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

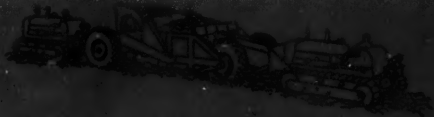
A WINNER FOR WINKELMAN! This big red TD-24 really pays off, loading 22 pay yards a minute for D. W. Winkelman on a job near Syracuse, New York.

INTERNATIONAL



INTERNATIONAL
HARVESTER

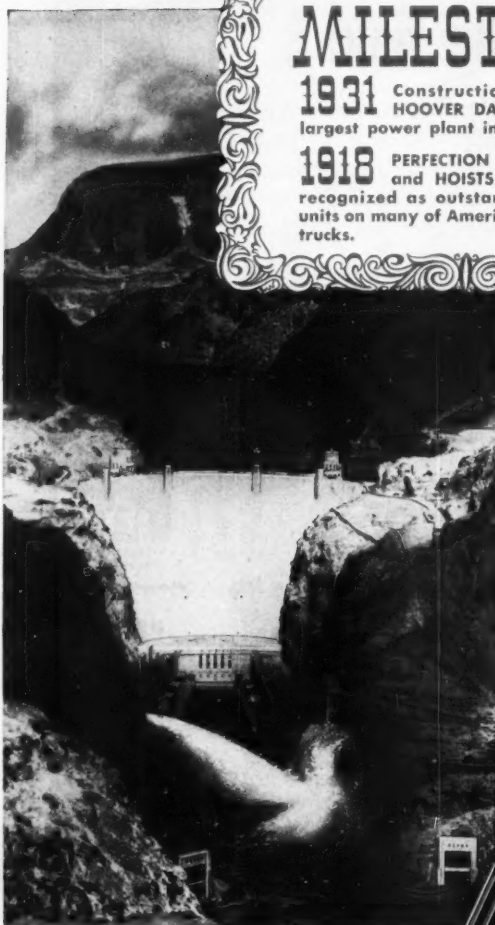
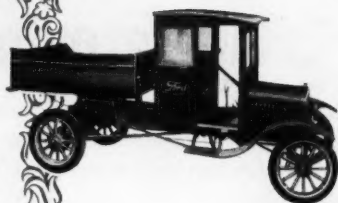
**POWER
THAT PAYS**



MILESTONES

1931 Construction started on HOOVER DAM — then the largest power plant in the world.

1918 PERFECTION TRUCK BODIES and HOISTS were already recognized as outstanding haulage units on many of America's best motor trucks.



PERFECTION BODIES and HOISTS



Perfection
Type 354
Heavy - Duty
Dump Body
- capacity 17
cubic yards-
mounted with
No. 1027 Iso-
Draulic ROLL-
A-LIFT.

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For 33 years, Dealers and users have profited from Perfection's outstanding performance and dependability.

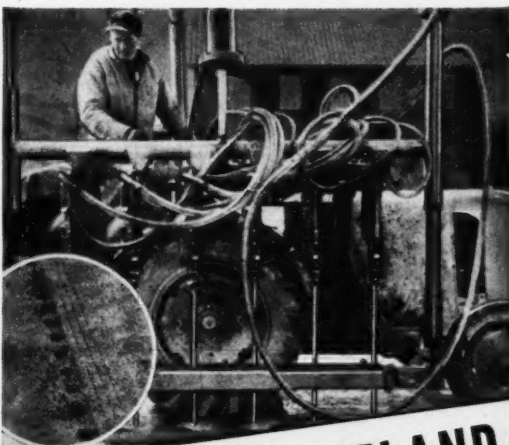
Write for descriptive literature.

Engineered and Manufactured by
THE PERFECTION STEEL BODY CO.
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PERFECTION
STAKE and DUMP BODIES
HYDRAULIC HOISTS



FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES • FOR ANY USE



Multiple Drill Rig for Line-drilling

This self-propelled rig has saved hundreds of dollars for contractors everywhere. It consists of 6 Le Roi-CLEVELAND H10 drills mounted on a Le Roi Centaur Tractor. All drills are attached to a single air cylinder controlled from the driver's seat, and feed into the concrete or pavement together. The rig is ideal for line-drilling and the web between the drill holes can be broached easily with Le Roi-CLEVELAND paving breakers. That's how it provides a fast, low-cost method of preparing pavement for trenching. Freedom from over-break permits clean, smooth resurfacing when job is finished.

Le Roi-CLEVELAND Announces 3 New Air Tools for Contractors

...they save work, cut costs, and help keep
jobs on schedule

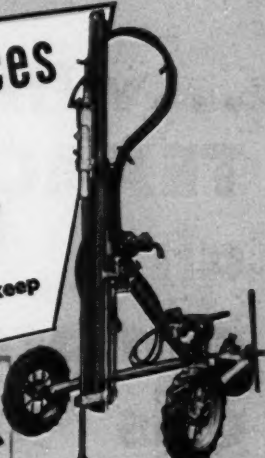


18-lb. H22 Hornet Rock Drill

Handy is the word for this new tool. Available with spade or tee handle in wet or dry types. Fast drilling, easy holding, strong rotation, low air consumption, built-in lubricator, replaceable spacer bushing, 2-piece chuck and sleeve for $\frac{7}{8}$ " hex x $\frac{3}{4}$ " steel. Built like a big rock drill. Ideal for foundations, demolition, plumbing, sewers, conduit, pop-holing, dimension stone, etc.



Handcrank or . . .



. . . air motor
for fast, easy
adjustments



Model DR34 Light Wagon Drill

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No matter what your drilling job is — you can do it better, faster, for less with Le Roi-CLEVELAND rock drills and breakers powered with Le Roi Airmaster Compressors. Write for complete information or see your nearby Le Roi distributor.

RD-41



LE ROI COMPANY

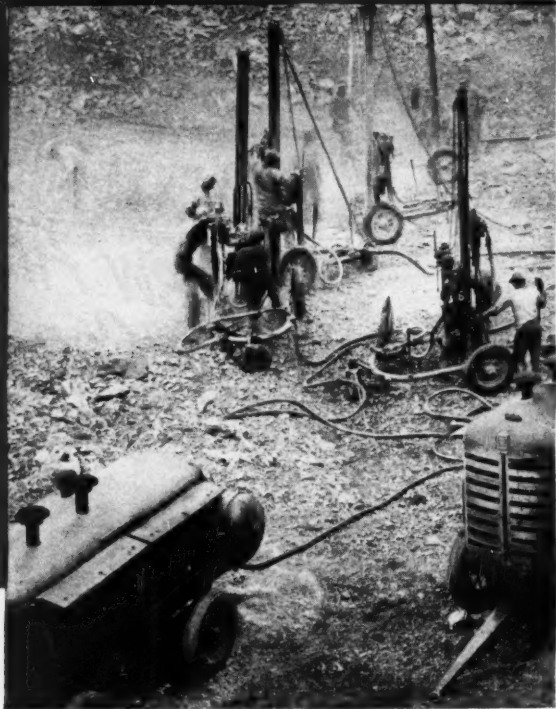
CLEVELAND ROCK DRILL DIVISION

12500 Berea Road, Cleveland 11, Ohio

Plants: Milwaukee • Cleveland • Greenwich, Ohio

Better air compressor ALL operating

...with
TEXACO
air
compressor
oils



Whatever your operating conditions or the size or type of your compressors, there is a Texaco air compressor oil *exactly right* to assure trouble-free and economical performance. For example—
★★ If *rust* is your problem, use a Texaco *rust-inhibited* air compressor oil. It will keep your compressors, intercoolers, aftercoolers, lines and receivers free of rust.

★★ If *carbon and gum formations* are causing trouble, use a Texaco *heavy-duty* air compressor oil with special detergent and oxidation-resistant properties. It will keep compressors clean under severest conditions.

★★ If *moisture is condensing* in cylinders and washing off your lubricant, causing excessive wear, a Texaco *compounded* air compressor oil

TUNE IN...
TEXACO STAR THEATER
starring MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.



TEXACO

performance under conditions...



LONGER DRILL LIFE

For longer drill life and more footage drilled at lower cost, use *Texaco Rock Drill Lubricants EP*. These "extreme pressure" lubricants give full protection against wear and rust under severest conditions.

will overcome the difficulty.

★★ If your concern is merely to assure clean operation and reduce wear under *normal conditions*, a Texaco *straight mineral* air compressor oil will do an excellent job.

A Texaco Lubrication Engineer will gladly help you select the right air compressor oil for your requirements. He'll also be glad to tell you

how the Texaco Simplified Lubrication Plan enables you to handle all your major lubrication *with only six Texaco Lubricants*. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

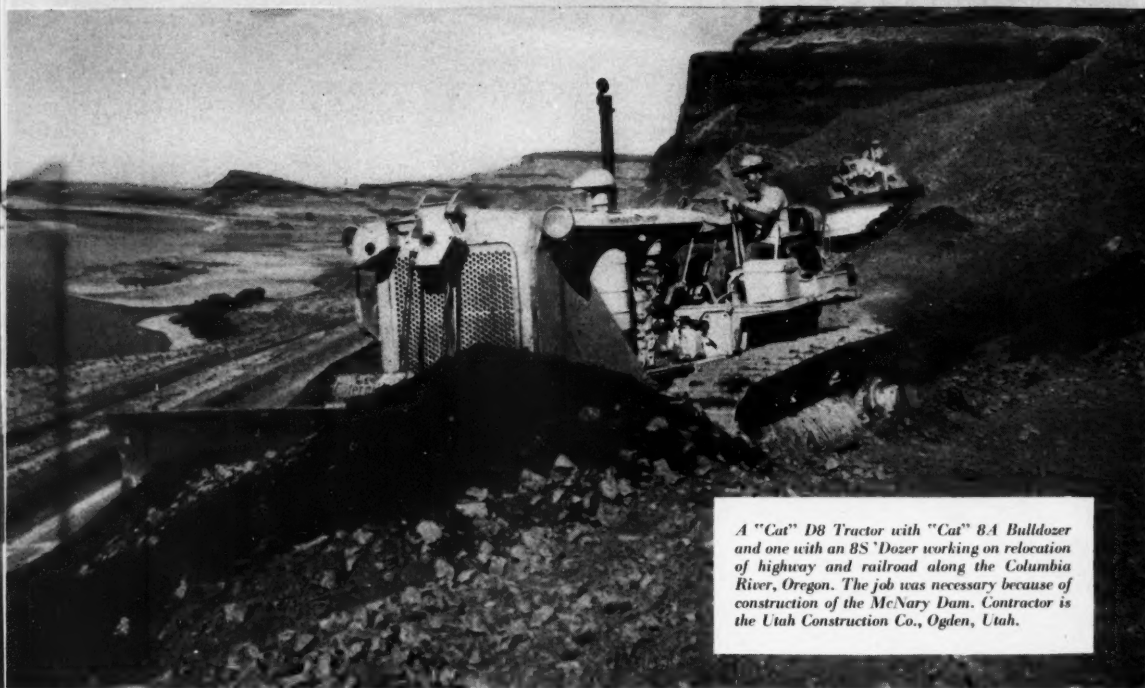
☆ ☆ ☆

The Texas Company, 135 East 42nd Street,
New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

There's a big



A "Cat" D8 Tractor with "Cat" 8A Bulldozer and one with an 8S Dozer working on relocation of highway and railroad along the Columbia River, Oregon. The job was necessary because of construction of the McNary Dam. Contractor is the Utah Construction Co., Ogden, Utah.

IF YOU WANT TO HELP YOUR COUNTRY— AND YOURSELF AT THE SAME TIME— READ EVERY WORD ON THESE TWO PAGES

Keeping equipment *on the job* is of prime importance today—to the nation as well as the contractor. The Military plans to spend 8 to 9 billions on construction in the next 18 months. And a production *backlog* of 52 billions was carried over into 1951 for bridges, roads, earthwork, government work, waterworks and other essential projects.

Right now there is a shortage of materials with which to build urgently needed machines and parts. Military and Defense Rated Orders get the nod over unclassified civilian needs. Steel and other materials are in short supply. This means that you—with our help—must get every last machine-power hour out of the equipment and parts you now have.

Down-time will not only weaken the defense effort, it can put the contractor himself in the hole. To get future business, he must get current jobs done without penalty or sacrificing his bond. Down-time means bad distribution of equipment: it means costly damage to equipment forced to do work it's not built to handle.

So to stay in business profitably, and help America arm for defense, do these things now:

- 1 Use equipment properly. "Cat" machines are built for hard use—not abuse.
- 2 Give extra attention *now* to preventive maintenance (see next page).
- 3 Have your equipment superintendent plan *ways and means* with your "Caterpillar" dealer. His maintenance responsibility begins where your operators' and mechanics' responsibility ends. He has the skilled servicemen and equipment to rework and rebuild worn parts to keep your machines on the job longer.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS



The last war showed the Military that "Cat" Earthmoving Equipment was as important to defense and offense as tanks. Here Sgt. Robert Chrisman operates a "Cat" D7 Tractor with matching blade on Davison airstrip at Ft. Belvoir, Va.

job ahead!

You're

the

Doctor

Today no owner can afford to think of direct costs alone. Good care of equipment can mean the difference between a producing machine and one laid up for repairs. To see how good care can save many hours of equipment life, reread your Operator's Instruction Book often and follow these suggestions.



• DUST

Think of dust as Machine Enemy No. 1. A few grains today—a few more tomorrow—and soon the result adds up to serious wear. Dust or dirt plugged breathers or air cleaners—use of dirty oil containers—loose intake manifolds—loose inspection covers—dirty clutch compartment—failure to wash flywheel clutch compartment—worn seals on crankshaft—defective gaskets—failure to clean oil filter openings . . . these are some of the vulnerable spots.



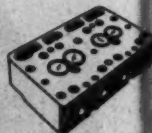
• TRACK ASSEMBLY

Don't let abusive use or neglect cripple the service life of your track assembly. Track adjustment and lubrication of rollers, carrier rollers and idlers are your job. Before excessive wear occurs on grouseers, links, pins, bushings, idlers, rollers and sprockets, call in your "Caterpillar" dealer. He can build up grouseers, rollers, idlers and links, and replace sprocket rims and turn pins and bushings so you will have many additional hours of service.



• CYLINDER HEADS

Prevent cracked cylinder heads by avoiding overheating, freeing, scale deposits, filling a hot engine with cold water, pulling heads down too tight, and other poor maintenance practices. Your "Caterpillar" dealer can repair most cracked cylinder heads. He can replace worn valve seats with valve inserts and restore the rocker arm mechanism to serviceable limits. Consult your Operator's Instruction Book for proper cooling system and valve care.



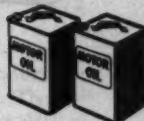
• COOLING

Don't let your engine overheat. Keep the cooling system free of scale, rust and sediment. Use soft or treated water, and when freezing temperatures exist, protect your engine with anti-freeze. Clean the radiator regularly with chemical flushing solutions. Remove foreign matter from the core by brushing or washing. Prevent engine troubles which come with overheating. Consult your Operator's Instruction Book for proper cooling system care.



• LUBRICATION

Careful lubrication practices will add much to your satisfaction through equipment performance, economy and long life. Use only recommended lubricants, changing the lubricant at proper intervals. And use only "Caterpillar"-proved filter elements. Remove dirt from fittings and clean around the crankcase filler cap before adding oil. A little care saves many hours of engine life. Consult the lubrication chart in your Operator's Instruction Book.



• PISTONS AND LINERS

Almost all the piston wear occurs in the upper ring groove. Your "Caterpillar" dealer can renew your pistons by machining the upper ring groove for a wide ring, many sizes of which are chrome plated. Worn liners can be deglazed and put back to work for many additional hours of service life. Consult your Operator's Instruction Book for information on lubrication and the oil cooling system.

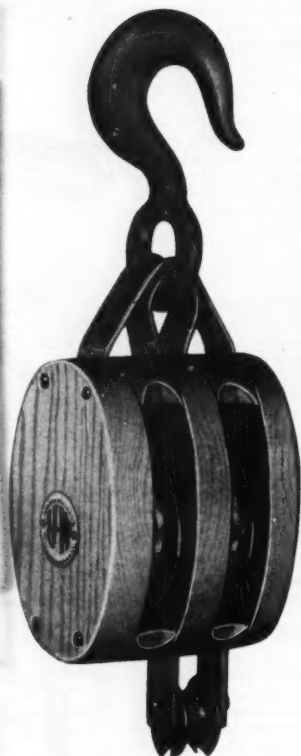


CATERPILLAR

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

REG. U. S. PAT. OFF.

Specify UPSON-WALTON Tackle Blocks



NOT THIS HOOK—but THIS HOOK

No Upson-Walton hoist hooks are formed by bending. All are drop-forged to size and shape, with substantially heavier section at critical points.

Extra strength at no extra cost

SAFE working loads of Upson-Walton tackle blocks exceed usual safe working loads by wide margins. (See table below.) They are engineered to withstand not only the weight of the load, but hoisting strength as well. In many cases a shackle is not required.

Specify this extra strength—at no extra cost. Your Upson-Walton distributor can serve you from local stocks.

COMPARE THESE SAFE WORKING LOADS!

	Usual Safe Working Load	Upson-Walton's Safe Working Load
3" Single	200 lbs.	265 lbs.
3" Double	300 lbs.	400 lbs.
3" Triple	400 lbs.	540 lbs.
4" Single	400 lbs.	510 lbs.
4" Double	550 lbs.	730 lbs.
4" Triple	700 lbs.	925 lbs.
5" Single	500 lbs.	675 lbs.
5" Double	750 lbs.	1000 lbs.
5" Triple	1000 lbs.	1325 lbs.
6" Single	1000 lbs.	1320 lbs.
6" Double	1500 lbs.	1900 lbs.
6" Triple	2000 lbs.	2640 lbs.
7" Single	1500 lbs.	1700 lbs.
7" Double	2000 lbs.	2575 lbs.
7" Triple	2500 lbs.	3000 lbs.
8" Single	1700 lbs.	2200 lbs.
8" Double	2450 lbs.	2850 lbs.
8" Triple	3200 lbs.	3500 lbs.
10" Single	2600 lbs.	2750 lbs.
10" Double	3400 lbs.	3650 lbs.
10" Triple	4200 lbs.	4900 lbs.
12" Single	3000 lbs.	3000 lbs.
12" Double	3750 lbs.	4600 lbs.
12" Triple	4500 lbs.	5400 lbs.

THE UPSON-WALTON COMPANY
CLEVELAND, OHIO

NEW YORK • CHICAGO • PITTSBURGH

GULF PRODUCTS *and* **FINE SERVICE** *keep equipment rolling on Western Extension of the Pennsylvania Turnpike*

Hunkin-Conkey Construction Company, Cleveland, Ohio, has one section of the Western Extension in Allegheny County. The job involves moving over 1,900,000 cu. yds. of earth and over 110,000 sq. yds. of concrete paving.



THE Western Extension of the Pennsylvania Turnpike is another big and important project where the majority of contractors rely on Gulf to help keep equipment delivering top performance.

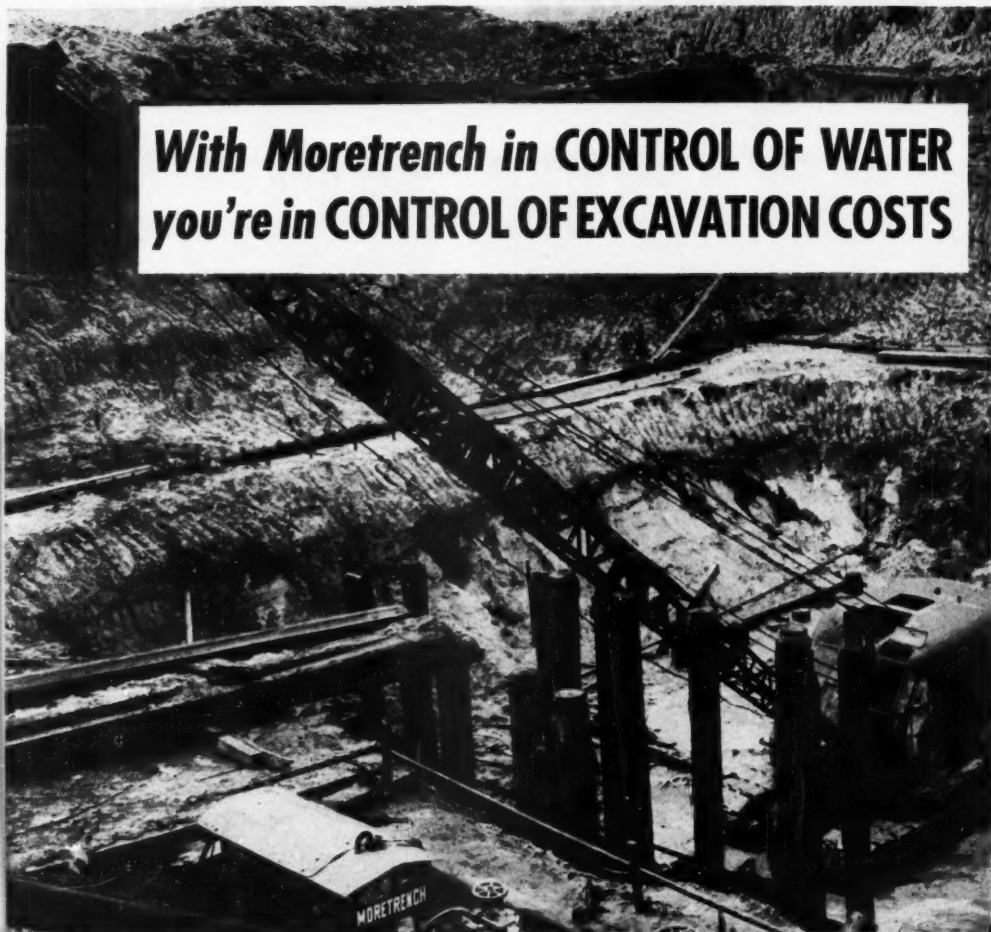
Leading contractors, like Hunkin-Conkey Construction Company for example, know from experience that Gulf quality lubricants provide an extra margin of protection against mechanical delays. And that Gulf fuels insure full engine power and efficiency.

Then, too, they appreciate the engineering counsel Gulf provides to assure the most suitable lubricants and fuels for every unit and operating condition. And Gulf's prompt delivery service.

Let us discuss with you how Gulf products and services can help you on your next job. They are available to you through more than 1200 conveniently located warehouses. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.



With Moretrench in CONTROL OF WATER you're in CONTROL OF EXCAVATION COSTS



Fairfax Pump Station, Memphis, Tenn. — where a Moretrench Wellpoint System moved in and 17 feet of water moved out!

COUNT the ways you save when you excavate
"in the dry"

**MORETRENCH results make
wet jobs pay.**

Contact us for a down-to-earth answer to
any pumping problem. We've been solving
them for twenty-six years.

1. Wet costs eliminated. Forget about rubber boots, planking, material rehandling, sheeting.
2. Time saved. Dry digging is rapid. Progress unhampered.
3. Manpower production multiplied — more work per day with less effort under better working conditions.
4. Pumping cost is low.

MORETRENCH CORPORATION

90 West St.
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4900 S. Austin Ave.
Chicago 38, Illinois

7701 Interbay Blvd.
Tampa 9, Florida

315 W. 25th St.
Houston 8, Texas

Rockaway
New Jersey

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

NEW TERRATRAC

GT 30

WORKING PARTNER of THE GIANTS



**THE ONLY TRUE
CRAWLER IN ITS
POWER RANGE**

A GREAT WORKER
Easy to operate and service

POWERFUL ... newest Continental 140 cu. in. engine.

RUGGED ... heavy duty track rollers. Longer track assembly. Heavy frame and construction throughout.

VERSATILE ... easy handling of loaders ($\frac{1}{2}$ cu. yard), bulldozers, angle dozers, winches, back hoes, scrapers.

TERRATRAC has many extras ... high clearance, 3 point hydraulic lift, interchangeable rubber and steel track shoes and variable gauge widths.

COMPARE the GT 30 feature for feature with crawlers twice its price.

COMFORT... note the wide arm rest, upholstered seat, conveniently located controls, full visibility from all sides and plenty of leg space, well guarded.

Get the complete detailed story—Plan to see the Terratrac GT 30 in action. Write for name of your nearest distributor.

AMERICAN TRACTOR CORPORATION

CHURUBUSCO, INDIANA





Third-degree for freight-loads

You'd be surprised how frequently we check carload shipments of Cumberland Cements on arrival at destination. Riding in a freight car is pretty rugged stuff—even for cement—and we want to make sure we're doing the best possible loading job.

These cars are given a careful going over. We crawl all over the inside, and we don't want to find any breakage—not one single bag. If we find evidence of load shift or damage due to rough car

handling the results are charted for study by our loading experts.

We don't claim perfection—yet—but by constant checking and improvement of our loading methods—by finding new ways and revising old ones—we are doing our level best to send you Cumberland Cements in clean, unbroken bags. As fast as we find better ways of loading cement without increasing the cost to you—we'll use 'em.

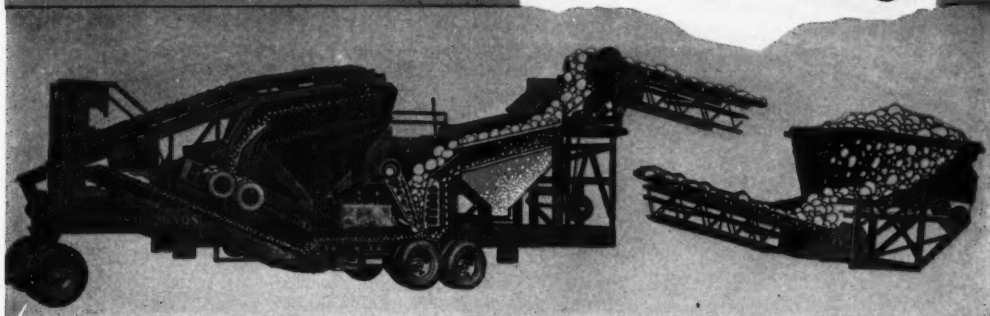
Cumberland
PORTLAND CEMENT COMPANY
Chattanooga Bank Building • • Chattanooga 2, Tenn.



Portland — High Early Strength — Air Entraining — Masonry

**FREE
AGGREGATE**
FOR BIGGER PAYLOADS
MORE PRODUCT COMBINATIONS

The **UNIVERSAL** 293QS TwinDual Gravel King

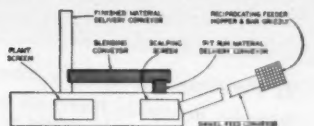


PRODUCT COMBINATIONS TO FIT A VARIETY OF JOBS

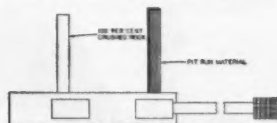
Universal gives you more tons per hour at less cost per ton with three full stages of crushing and two screens in the 293QS TwinDual Gravel King.

Pit run material of finished size is pre-screened and does not pass through the main plant. You get **Free Aggregate** which increases over-all production 50 to 100%. The main plant screen sizes crushed material only and is not burdened with natural finish. Top crushing capacity is provided by Universal's exclusive TwinDual Method which divides the crushing load between three crushing stages: First stage - 18" x 24" or 20" x 36" Jaw Crushers, Second and Third stages - 24" or 30" TwinDual Roll Crushers.

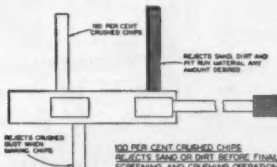
For those big jobs requiring volume production and a variety of finished product combinations, investigate the 293QS TwinDual Gravel King. Complete details in Bulletin No. U501. Write for your copy.



FOR PRODUCING ROAD AGGREGATE
BLEND FINISHED SIZE PIT RUN MATERIAL WITH CRUSHED MATERIAL



FOR PRODUCING 2 PRODUCTS SIMULTANEOUSLY
100 PER CENT CRUSHED SCREEN AND 100 PER CENT CRUSHED CHUTE



100 PER CENT CRUSHED CHIPS
100 PER CENT CRUSHED CHUTE BEFORE FINAL SCREENING AND CRUSHING OPERATION

UNIVERSAL ENGINEERING CORP. division of PETTIBONE MULLIKEN CORP.

327 8th St., N.W., Cedar Rapids, Iowa
Phone 7105

4700 W. Division St., Chicago 51, Illinois
Phone SPaulding 2-9300

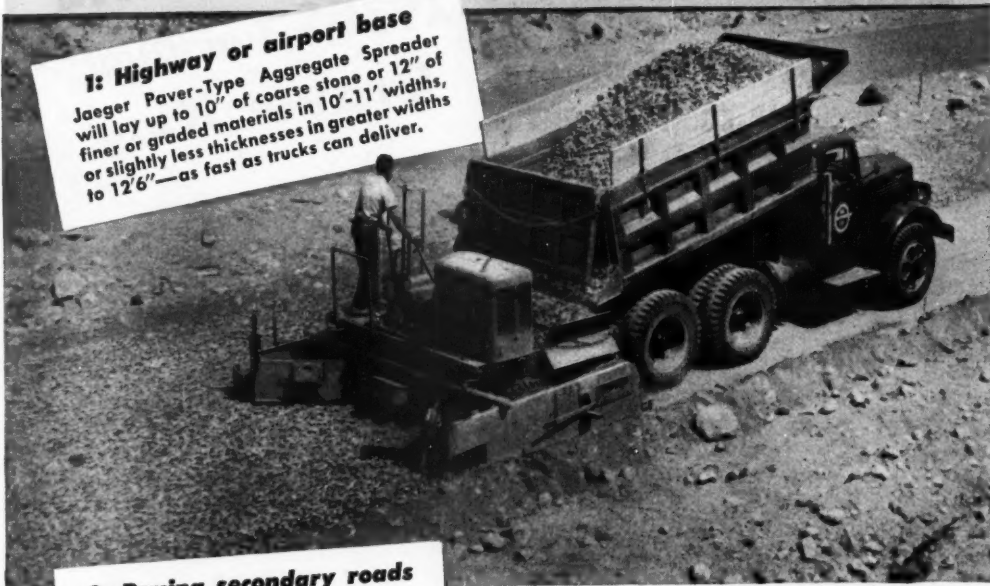


WHICH OF THESE 7 JOBS IS YOURS?

there's a JAEGER machine to cut its cost

1: Highway or airport base

Jaeger Paver-Type Aggregate Spreader will lay up to 10" of coarse stone or 12" of finer or graded materials in 10'-11' widths, or slightly less thicknesses in greater widths to 12'6"—as fast as trucks can deliver.



2: Paving secondary roads

Spreader accurately lays both base and surface aggregates, plant-mixed stabilized soil and any free-flowing hot or cold bituminous mixes.



Traction on subgrade, not on loose material: Choice of 4-wheel drive or crawlers (interchangeable) which operate on subgrade or compacted course. Nothing to displace the newly laid material and leave high and low spots.

Straightedge runners insure accuracy: Ride evenly on subgrade and carry strike-off independent of vertical motion of rest of machine.

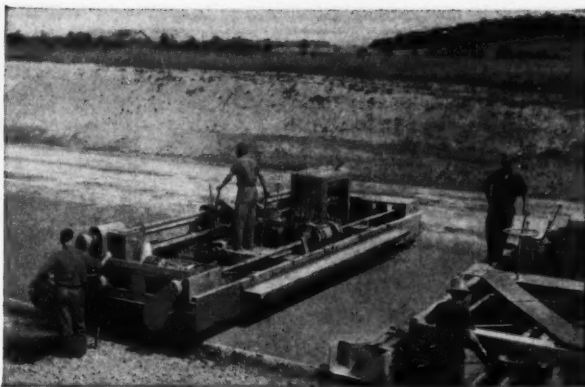
3: Parking lots, drives

Same simple Spreader, costing ½ the price of bituminous pavers, does fast, smooth job with big labor saving.



Blends joints, lays flush to curbs, headers: Bleed gates and blender wings do perfect job.

Two models, for any size trucks: 10'-12½' model with 8' hopper for smaller trucks on 16'-18' widths of work. 11'-12½' model with 9' hopper for any trucks up to 24-ton semi-trailers. Telescopic outside adjustments make width changes easy. Ask for new Catalog SPS-1.



Note how 12" oscillating screed, on spreader, accurately meters material to the finisher.



3 1/4" drill, powered by 250 ft. compressor, drills 35% faster than with 210 ft. of air.



All users tell you: "No pump knows how to handle water like a Jaeger."

4: Concrete paving with 3-screed "team"

Jaeger Screw Spreader, equipped with oscillating screed, accurately meters exact amount of material needed ahead of the Finisher. Saves carry-back, maintains uniform compression under finishing screeds. One Jaeger double screed Finisher completes job. Only Jaeger provides diagonal rear screed for finishing pitched slab or super-elevated curves.

5: Stepping up air tools to 30%-40% more work

Smart contractors no longer waste high-cost labor on loading air tools. With the 15% to 25% more air supplied by Jaeger Air-Plus Compressors, users keep their tools working at full efficiency, actually do as much as 4 days work in 3, and pay less per cubic foot of air than with any other compressors built. Jaeger's "new standard" sizes are 75, 125, 185, 250, 365 and 600 cfm—to match today's tools.

6: Low cost pumping

Jaeger Pumps are built oversize to produce rated volume at slower speeds, hold more priming water, are subject to less abrasive wear. Prime without vapor lock on toughest pulls, maintain efficiency more thousands of hours. Sizes to 10".

7: A faster pace for concrete crews

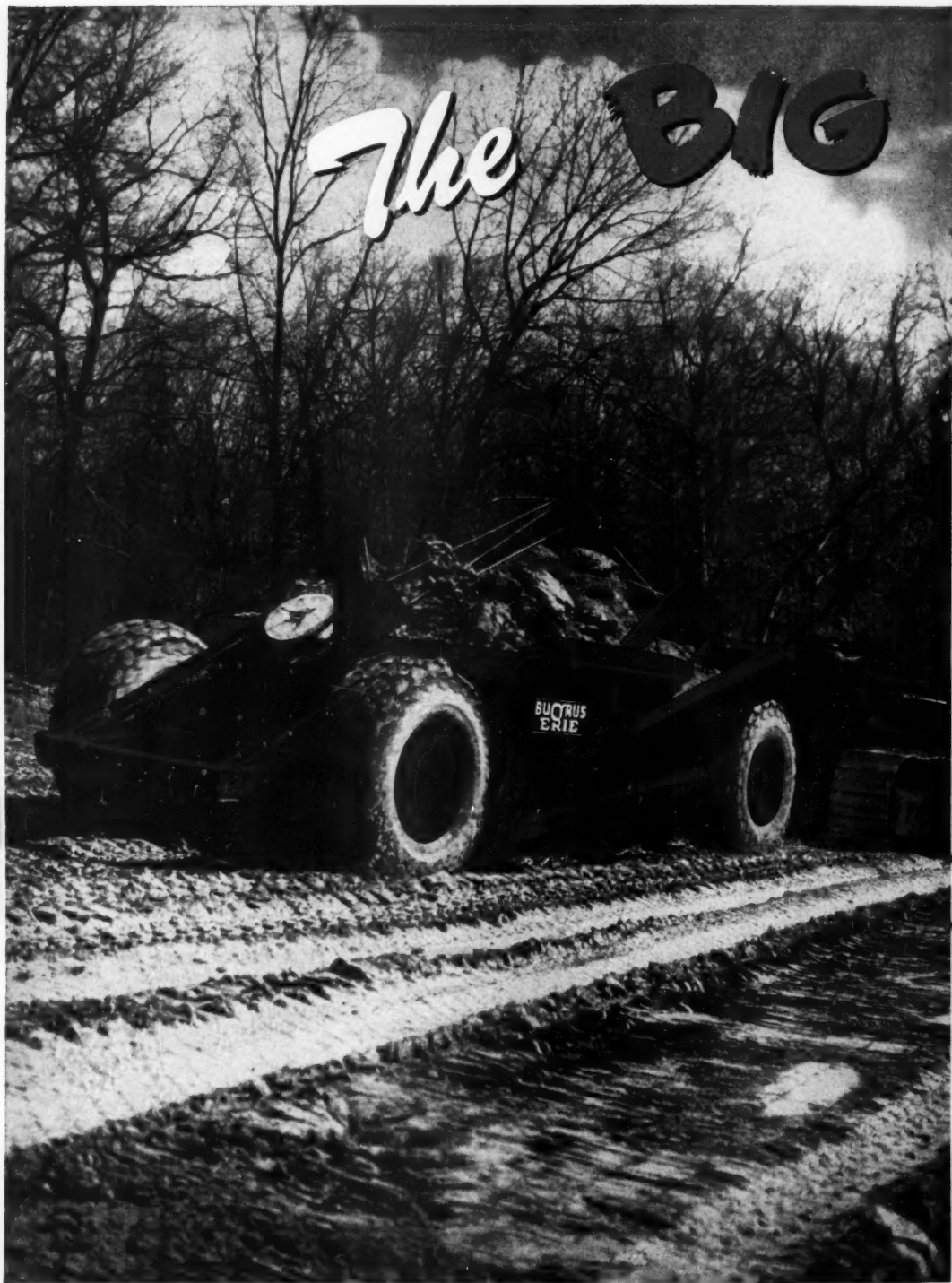
Bigger daily yardage with Jaeger fast "Skip Shaker" loaders and fast discharging "Dual Mix" drums. Sizes 3 1/2S to 16S.



Now is the time to make good use of your Jaeger distributor's service

THE JAEGER MACHINE COMPANY

800 Dublin Ave., Columbus, Ohio • Distributors in 130 Cities • Cable MCANLITL



RED TEAM

... Best at Every Distance on Highway Relocation Job

HANDLING 600,000 yd. of wet sticky clay put every tractor-scraper unit in the contractor's spread to a rugged test on this job. Both loading and unloading were extremely difficult, and hauls ranged from 300 to 2200 feet. Yet the Big Red Team — an International TD-24 and Bucyrus-Erie B-type scraper like the one pictured — outperformed, out-produced every other unit on every count.

Actual on-the-job performance showed that the Big Red Team delivered up to twice as much dirt as any other tractor-scraper combination. Its hourly averages were as high as 173 cu. yd. on the 350-ft. hauls — 118 cu. yd. on the 2000-ft. hauls.

The Bucyrus-Erie scraper is the pay-dirt member of the Big Red Team — perfectly matched to the TD-24 to take full advantage of its great power. Both B-type models, the 15-yd. and the 22-yd. (struck capacities), load quicker, dump faster and cleaner in any kind of material than any other scraper. See for yourself. Ask for a demonstration of the Big Red Team on *your* job as soon as possible.

281751C

SOUTH MILWAUKEE



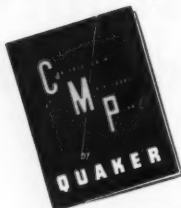
WISCONSIN

See

**Your International Industrial
Tractor Distributor**

ASKS NO FAVORS...FEARS NO LOADS

QUAKER BELTING



**FOR MORE PRODUCTION
... GET THIS BOOK**
... and the entire QUAKER Conservation Maintenance Plan — includes maintenance memos, wall chart, factual data to help you reduce maintenance. No charge ... no obligation.

Stands Weather ... Wear ... Extreme Flexing on Any Job

On highway projects ... or construction operations, Quaker Belts take the roughest treatment ... give the longest wear.

Quaker Elevating Grader Belting is fabricated from prime, selected duck with friction covers of specially compounded rubber. Flexes freely over the smallest pulleys. Pre-tested quality construction resists bolt tear-outs and ply separation at splice. This service-proved belt gives long wear and top performance on the toughest construction jobs.

For positive on-the-job service with maximum production specify Quaker Rubber Products. For data on the complete Quaker Line of products for the Construction Industry, write for catalog 39-A.

QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24, PENNA. BRANCHES IN PRINCIPAL CITIES



Smile with Smith-Mobile

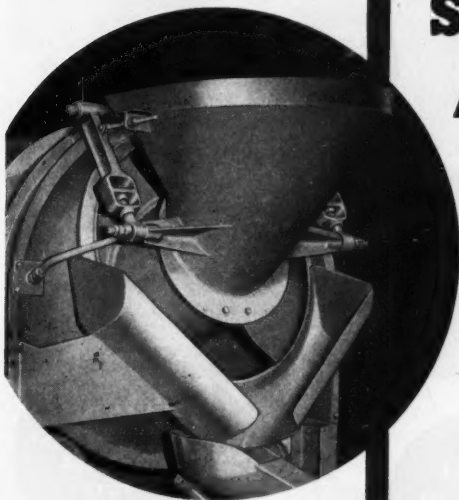
OH BOY...THAT'S WHAT I CALL
UTOPIA IN TRUCK MIXER DESIGN



SMITH **LOAD LIMIT** Models

Solve Your Seal Problems

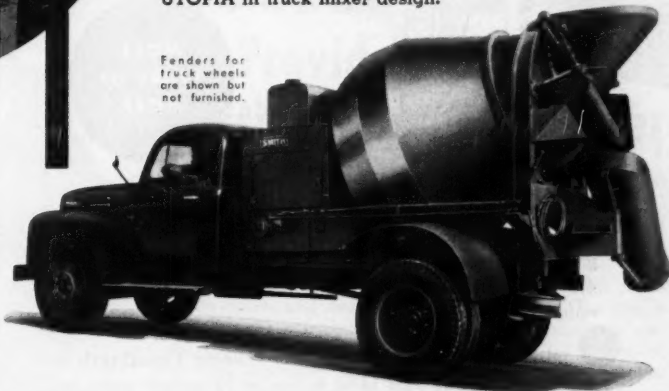
Now — you can say good-bye to seal or bearing maintenance, lubrication and alignment problems forever. A dream? No, that's an actual fact. For in designing **LOAD-LIMIT** Truck Mixers and Agitators, Smith Engineers got rid of closing door troubles by simply eliminating the closing door. You have the well-known Smith-Mobile advantages of Rear-End Charging, Visible Mixing and Fast Discharge . . . at the same time you can forget about seal problems and haul bigger payloads, while meeting highway weight limits. As one Ready-Mix Operator expressed it, "Oh Boy — that's what I call UTOPIA in truck mixer design."



Weigh Less! Cost Less!

Smith **LOADLIMIT** models weigh less and cost less than smaller size standard machines. Yet they haul **BIGGER PAYLOADS**. Initial investment is less . . . operating costs lower . . . maintenance costs reduced to rock bottom. This adds up to **GREATER PROFITS**.

Smith **LOADLIMIT** models are available in No. 3, 4½, 5½ and 6½ sizes . . . the **ONLY** load limit machines on the market carrying approved **NRMCA** rating plates.



Fenders for truck wheels are shown but not furnished.

SEE YOUR NEARBY SMITH DISTRIBUTOR when in need of concrete mixers, truck mixers and agitators. Smith distributors are selected on the basis of their integrity, service facilities and experience in the construction machinery industry. They normally stock essential parts and employ mechanics skilled in the art of repairing construction equipment. Any Smith distributor will gladly service your equipment, promptly and efficiently.

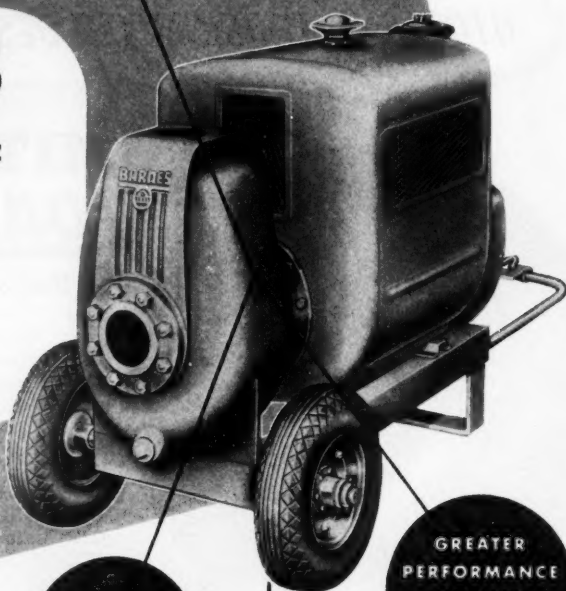
THE T. L. SMITH COMPANY, 2851 N. 32nd St., Milwaukee 45, Wis., U.S.A.



CONCRETE MIXERS

For **BIGGER** and **BETTER** Concrete Mixers and Truck Mixers . . . **LOOK TO SMITH**

Only the BARNES "33,000 for 1" Line Gives You ALL THREE!



QUICKER
PRIMING

MORE
YEARS OF
WORK

GREATER
PERFORMANCE
ON LESS
FUEL

- 1 **GREATER PERFORMANCE ON LESS FUEL!** Barnes Self-Priming Centrifugals deliver not 1,000 — not 10,000 — but 33,000 gallons of water for each gallon of gas used. That's equal to 4½ railroad tank cars filled and overflowing! That's pumping economy unmatched!
- 2 **QUICKER PRIMING!** Barnes Self-Priming Centrifugals will prime with pump body filled as low as ⅓ normal water level. And this surer, faster priming is yours without a loss in pump efficiency due to recirculation!
- 3 **MORE YEARS OF WORK!** Barnes Centrifugals are really built! Heavy duty body! Heavy duty non-clogging impeller. Life-time Super Seal with case hardened bearing surfaces! They assure trouble-free service on job after job — year after year!

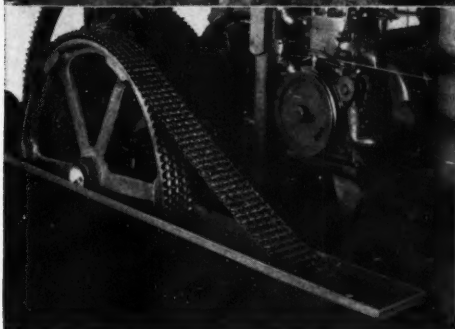
From 4,000 to
90,000 G.P.H.
Choice of Electric,
Diesel, Gasoline or
Pulley Drive



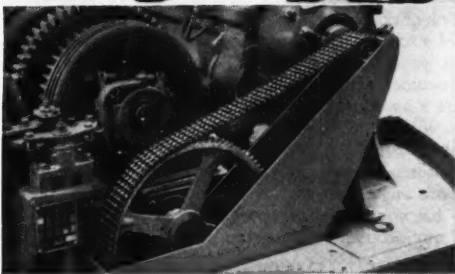
BUY THE BEST • • • BUY BARNES

FOR EXCAVATORS OF ALL CAPACITIES

The 2½ yd. dragline shown is Bucyrus-Erie 54-B. Below is shown 4-strand Diamond Roller Chain driving transmission unit and boom hoist machinery.



Bucyrus-Erie ½ yd. shovel with close-up of transmission unit shown below. Top of chain casing removed to show the Diamond Roller Chain drive.



Widely Known DIAMOND ROLLER CHAINS Provide Sure and Lasting Power Transfer

● Now the importance of using *well known* and proven equipment and parts is more vital than ever.

Diamond Roller Chains have been proven through all the years of modern earth handling equipment—on every kind of job—in all parts of the world.

Longer useful life and greater reserve strength mean fewer delays and more continuous yardage. That this is widely acknowledged by top machinery engineers and successful contractors, both large and small, is evidenced by the constantly increasing use of Diamond Roller Chains. Precision-made to higher quality standards, Diamond will serve you most economically.

DIAMOND CHAIN COMPANY, Inc.

Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND



ROLLER CHAINS



What's the "BEST BUY" in Wire Rope ?



**LET YOUR RECORDS
TELL YOU!**

The only way to determine a wire rope's value is to record the actual work it does . . . in terms of ton-miles, yards of rock moved, cars of coal hauled, etc. We'd like to have you keep such records on Bethlehem rope and any competitive ropes you may be using. Make a regular practice of it, so that you'll *know* how much each rope has done before it's scrapped.

At intervals, study these figures. They're your real yardstick of comparison. When you divide the purchase price of a rope by the total work it's done . . . expressed in tons, yards, or other units . . . the real cost of the rope becomes evident.

There's no truer method of determining today's best buy in wire rope. That's why we urge that you stack Bethlehem rope against the field and make your own comparisons—based on your own personal records.

Is there any better way of inviting you, the customer, to see for yourself? Is there any better, fairer way of laying our product right on the line?

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation, Export
Distributors: Bethlehem Steel Export Corporation



Gradall-MULTI-PURPOSE MACHINE makes *Big Savings* for large utility company

Read how a new mechanization program is saving thousands of dollars for one of the country's largest utility companies.

You will find much valuable information from the experience of this big electric company in developing and adapting mechanized equipment for the kind of jobs regularly faced by construction engineers and contractors. Many different machines are listed along with specific applications. Here's what they say about the Gradall —

- "... earth excavation costs are approximately 95% lower with the Gradall than with hand shovel work."
- "... 30% less than conventional trenching machine costs in street excavations."
- "... this truck-mounted machine, with a hydraulically-powered boom will do things which are almost unbelievable."
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- "... with line drill, broach and Gradall machines, we were able to reduce cost of pavement removal about 85%, as compared with the old method using pneumatic jack hammers and hand loading."
- "... the same Gradall also makes light work of pile and shore pulling."



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For nine years, STANOLUBE HD Motor Oil has demonstrated its ability to cope successfully with the most difficult problems of lubrication in automotive diesel and heavy-duty gasoline engines. Now, all of the outstanding qualities of this product have been incorporated in a new and better heavy-duty lubricant: STANOLUBE HD-M Motor Oil.

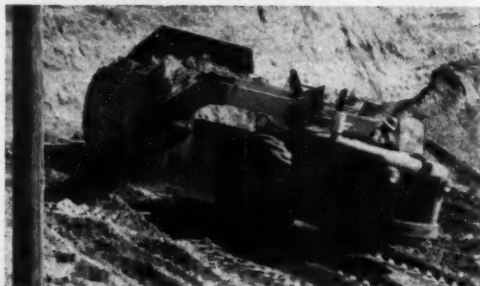
In extensive field tests, new STANOLUBE HD-M has proved its ability to benefit harder working heavy-duty fleet engines these two ways:

1. Extends engine life. Because of improved detergent-dispersant action, new STANOLUBE HD-M keeps engines clean under severe conditions imposed by adverse fuel quality, higher operating temperatures, and prolonged periods of hard operation. Freedom from harmful deposits means less wear, longer life for fleet engines.

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A Standard Oil lubrication specialist can help you obtain maximum lubrication benefits from STANOLUBE HD-M. To reach him, just phone your local Standard Oil Company (Indiana) office.

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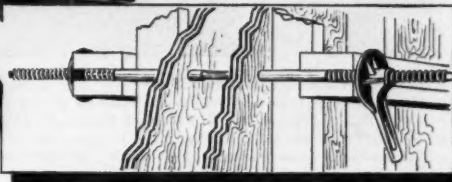
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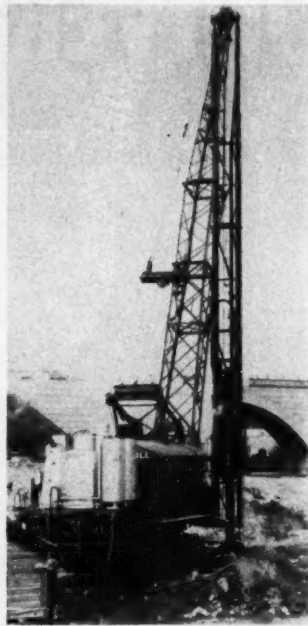
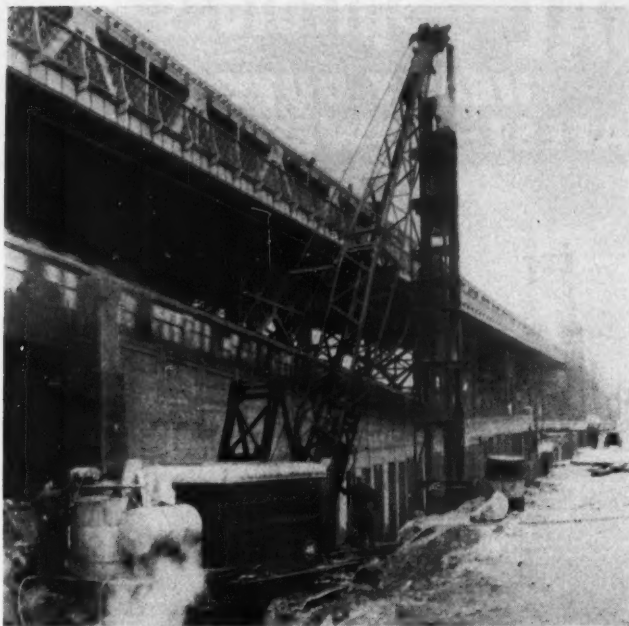
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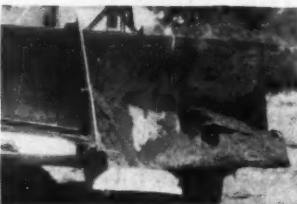
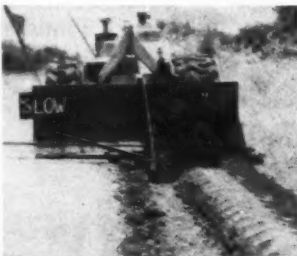
Service Wherever You Build... Coast-to-Coast

Construction News in Pictures . . .

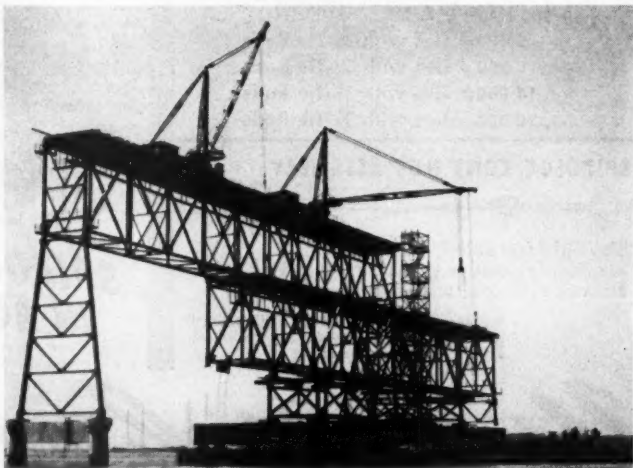


PICKABACK STEAMERS—These two diesel rigs of New York contractors take their steam along for driving piles. At left, Arthur A. Johnson Corp. and Mason & Hanger Co.'s Lorain 80, with 50 ft boom and McKiernan-Terry 10-B-3 hammer, drives steel soldier beams for subway cut in Long Island City. At right, Tully &

DiNapoli Inc.'s Northwest 80-D, with 60-ft boom and Vulcan No. 1 hammer, drives 10-in. pipe piles for highway underpass in Queens. Littleford Quik-Steam Vapor generators on rear of each machine reach working pressure in few minutes from cold start, operate automatically on No. 3 oil.—M. D. Morris photo (right)



BULLDOZER SKIMMER—Extra cutter fitted to bottom of blade on Tournadozer skims 2-ft strip for widening Hawaiian road. It takes cut 6 in. deep, and center divider casts material to side. Cut will be backfilled with rock; then entire road will be resurfaced with 2 in. of new material. Contractor for Territorial Department 6-mi highway improvement project is E. E. Black, Ltd., who devised novel cutter.—Co-Operator photo



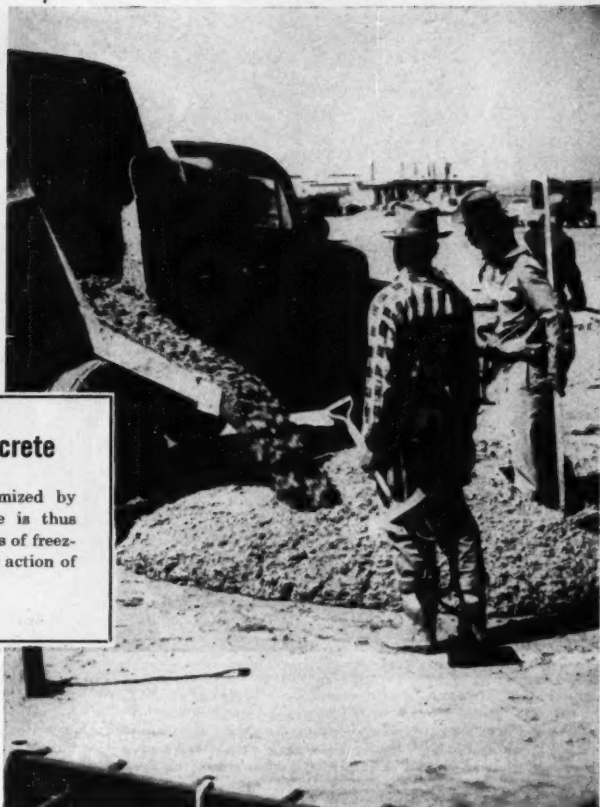
DOUBLE-DUTY SPAN—High span of Maryland's Chesapeake Bay Bridge, fitted with stiffleg derrick travelers, serves as dock from which other spans are erected on falsework alongside. Spans are floated on barges and placed in 4-mi bridge as they are completed, and 19 are being handled in this manner by Bethlehem Steel Co., superstructure contractor. Unusual erection procedure was described in detail in our February issue.



Better for paving work

Concrete made with Duraplastic air-entraining portland cement needs less mixing water for a given slump. The resulting concrete is more workable, more plastic and more uniform.

It dumps, spreads, and finishes easily, allows earlier protection for curing. (Photo right shows Duraplastic concrete being poured for a section of landing strip at Hutchinson, Kansas, Municipal Airport. Note cohesiveness and uniformity of mix. Contractor: J. H. Shears' Sons, Hutchinson, Kansas.)



Makes more durable concrete

Segregation and bleeding are minimized by using Duraplastic cement. Concrete is thus fortified against the destructive effects of freezing-thawing weather and the scaling action of de-icing salts.

YET DURAPLASTIC* COSTS NO MORE

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

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DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT



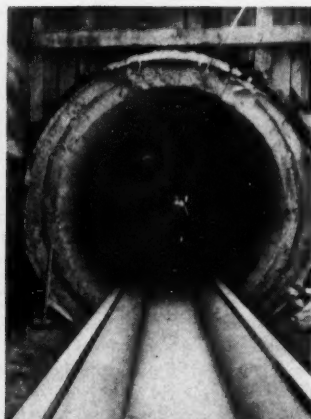
Makes Better Concrete at No Extra Cost

CM-D-129

"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network



NEAT DAM PLANT—Extraordinary air view shows entire plant layout of General-Shea-Morrison at Hungry Horse Dam (CM&E, Feb. '50). At bottom is 900-ft storage area for 400,000 tons of raw aggregate (156,000 tons live) that is trucked from gravel pits $4\frac{1}{2}$ mi downstream; next is processing plant with finished aggregate stockpiles. A 1,600-ft conveyor leads to mixing plant where cement and pozzolan are trucked in 7 mi over access highway. Towers of concreting cableways hang on canyon walls.—USBR photo

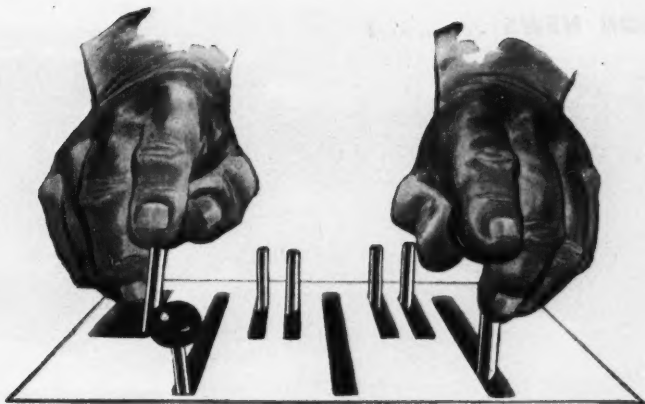


DOLLY—Cast iron XH 42-in. water main in 12-ft lengths will be rolled into 78-in. under-track tunnel (top) on concrete cradling dollys riding rails in floor. Milwaukee's L&L Service Co., contractor, calks joints, then shoves pipes.—C. I. Pipe News



FAMOUS BRIDGE—New York's Brooklyn Bridge is given \$3,500,000 face-lifting to expand its traffic carrying capacity from 3,000 to about 6,000 vehicles per hr. after 68 yr of service. Here, 3-in. Carnegie steel grating is welded in place, held tight against next panel and to supporting beam by wedge clamp that

prevents warping. Grating will be filled with concrete, replacing 9-in. wood blocks. Other work on modernization job of New York's Kleven's Corp., general contractor, includes removal of old steel trusses, cross-beams, and train and trolley tracks. New roadways are three lanes each, instead of two.



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SMOOTHER, EFFORTLESS *Speed-o-Matic* CONTROLS**

**LINK-BELT
SPEEDER**

Fingers instead of muscles do the work, thanks to Link-Belt Speeder's remarkable, exclusive Speed-o-Matic* controls!

But there's more to this than ease of operation. Every move of Shovel-Crane is faster, surer—far more effortless. You get "pin-point" placement of bucket, shovel or hoe, and there's no drag or lag, jerk or jump. And for perfect control, you "feel the load" every inch of the way.

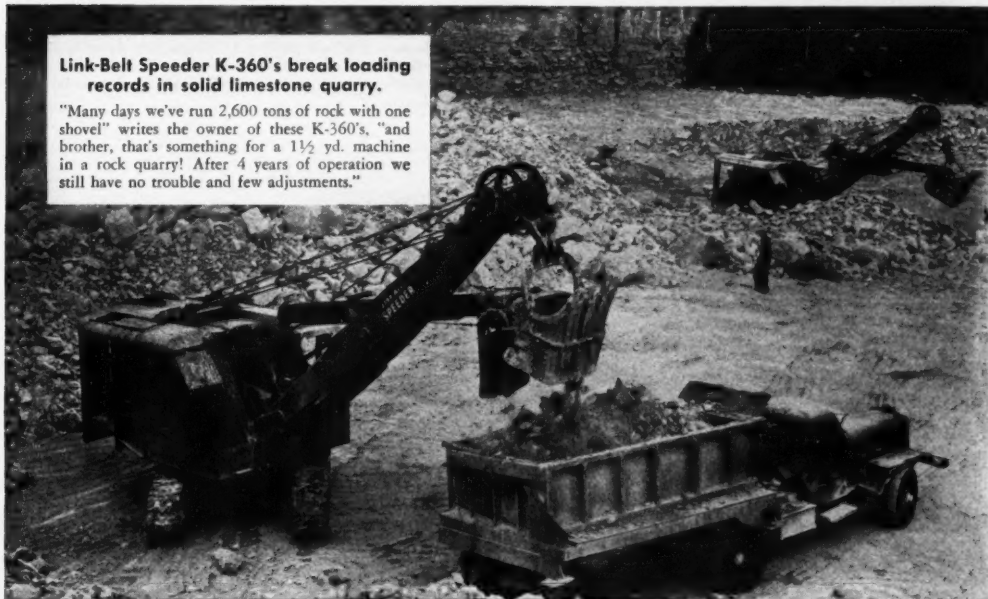
Operators praise the ease Speed-o-Matic controls provide. Say they keep far fresher, far more alert—even during long overtime. This pays off in greater output, more profitable operation for you.

When you're considering Shovel-Cranes—remember, only Link-Belt Speeders can offer you the amazing advantages of Speed-o-Matic *full* hydraulic controls. Look to Link-Belt Speeder for *more work*, more kinds of work, more of the time.

**On 51, 300 and 500 series*

**Link-Belt Speeder K-360's break loading
records in solid limestone quarry.**

"Many days we've run 2,600 tons of rock with one shovel" writes the owner of these K-360's, "and brother, that's something for a 11½ yd. machine in a rock quarry! After 4 years of operation we still have no trouble and few adjustments."

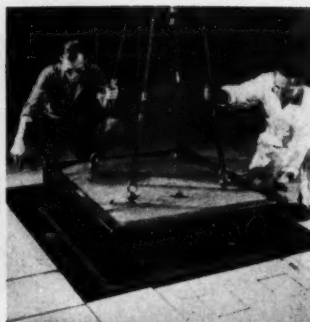
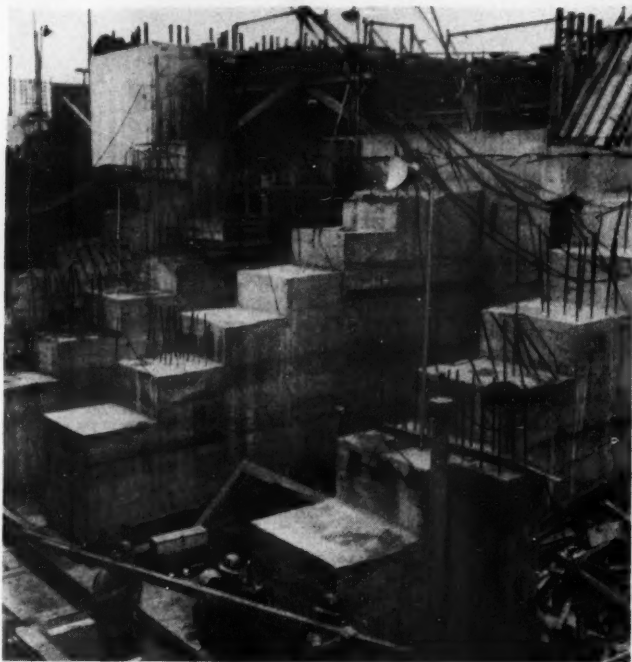


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Builders of the most complete line
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CONSTRUCTION NEWS ... continued



ATOMIC PILE—H. K. Ferguson Co. builds nuclear reactor at Brookhaven National Laboratory on Long Island, N. Y. Massive foundations that distribute 40,000-ton weight of research pile are buttresses (above) on continuous concrete mat nearly 6 ft thick. Security regulations call for two separate concrete plants to furnish 29,000 cu yd for job: One mixes ordinary concrete; other mixes a special secret type for precasting into blocks to shield pile

and confine harmful radiation. These shield blocks, steel plated, are stacked so they overlap (right) and are removable for servicing the pile. Other shielding is armor plate up to 18 in. thick. Another unusual job feature: Workmen stacking 60,000 graphite pieces in pile's heart are furnished daily with white coveralls, six pairs of gloves and basketball shoes to prevent contamination of material or slipping of men.



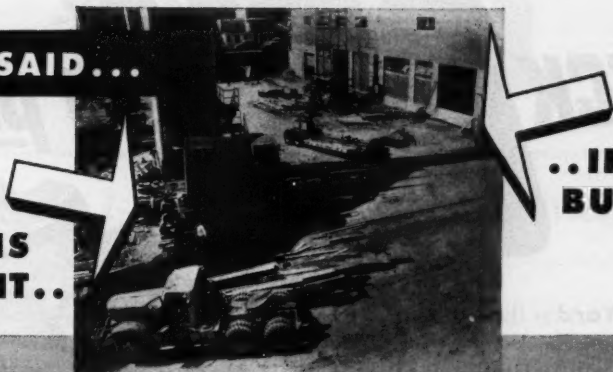
RADIO S.O.S.—Bob Blades of A. L. Blades & Sons Construction Co., Hornell, N. Y., radios for another crew to come and help right scraper, overturned on roadbuilding job. Firm equips its officials' and superintendents' cars with General Electric two-way mobile radio and has fixed stations at office and yards for

coordinating jobs and so rigs like this can be put back in operation fast. When bituminous paver broke down on one job, radio saved Blades \$200 in 1 hr: Over it he gave repair instructions to machine, and ordered his mixing plant several miles away to shut down, thereby saving fuel, labor and waste of material.

THE MAN SAID...

**"PUT THIS
EQUIPMENT..**

**..IN THIS
BUILDING"**

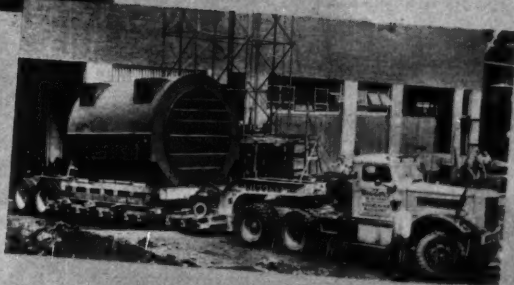


Wm. Higgins & Sons, Inc., of Buffalo, New York, solved this problem with their Talbert Removable Gooseneck* Trailer



- 1 Remove the gooseneck.
- 2 Place the tractor in the rear of the trailer.
- 3 Winch the equipment onto the trailer with the tractor winch.

- 4 Attach the gooseneck and tractor.
- 5 Back the complete rig into the building.
- 6 Unload into position.



THESE FEATURES OF THE **TALBERT removable gooseneck* Trailer** MADE THIS JOB EASY

- 1 Front end loading (note how they moved the equipment directly from the shoring onto the trailer)
- 2 Safe, easy operation (there can be no mistakes on a job of this type)
- 3 Low ground clearance (note the minimum head room available in the building entrance)

THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers



THE TALBERT-WAY IS THE EASY WAY

CHECK *CPY** *It pays!*

* **Cost Per Yard** is the best figure to keep in mind when you check your tire bills. And when you do, you'll find — as other cost-conscious construction men have already — that cost per yard is satisfactorily low when you use Goodyear's special-purpose, special-tread, job-specialist tires.

On a cost-per-yard comparison you're sure to find that ***It pays to Buy and Specify Goodyear!***



GOOD YEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Harold W. Richardson, Editor

Neglect Is Killing Your Equipment

WE'RE BACK IN COLORADO again. Remember the last time we wrote this page from God's country—last August it was—we were manipulating a fly rod way back in the gulches in the high country just under the Continental Divide, and taking some time out recuperating with a few cans of beer under the murmuring pines and hemlocks.

No such luck today. The high country pines are still buried under a mantle of spring snow. The trout are deep in the beds of frozen creeks. The situation being what it is, we did the next best thing we could think of—we spent the day with Homer Campbell, the most avid trout fisherman in all this vast Rocky Mountain Empire. Outside of the fishing season, Homer is busy as service manager for the H. W. Moore Equipment Co. in Denver. In his spare moments he writes a monthly feature for this magazine giving some mighty sound advice on taking care of your equipment.

After we had argued the fishing merits of the upper Rio Grande, the Colorado, the Gunnison and even my favorite North St. Vrain, Homer and I got to discussing the equipment situation. Here's a fellow who really knows equipment. In talking with him I was again

impressed with the tremendous part distributors play in the heavy construction business. Sandwiched as they are between the manufacturer and the contractor, they are in an excellent position to give some mighty valuable advice to both as to equipment design, performance and maintenance.

Campbell startled us with the statement that his shop was kept alive by idiotic neglect of equipment by owners and operators. To prove his point he took me on a tour of the big shop, outlining the history of each unit there for repairs. Every shovel, every tractor, every crane and every grader on the floor was there because of sheer neglect. Often the trouble was caused by some "knothead" operator, as Homer put it, but just as often the owner or master mechanic was to blame—for neglect, such as failure to change air cleaners and oil filters until dirt had ruined a beautiful engine.

Silly, isn't it? Yes, mighty silly to put a valuable revenue-producing machine out of commission by senseless neglect. As Homer sagely remarked, with equipment producing twice as much per unit as it did ten years ago, the contractor could afford to spend two hours a day on inspection, cleaning

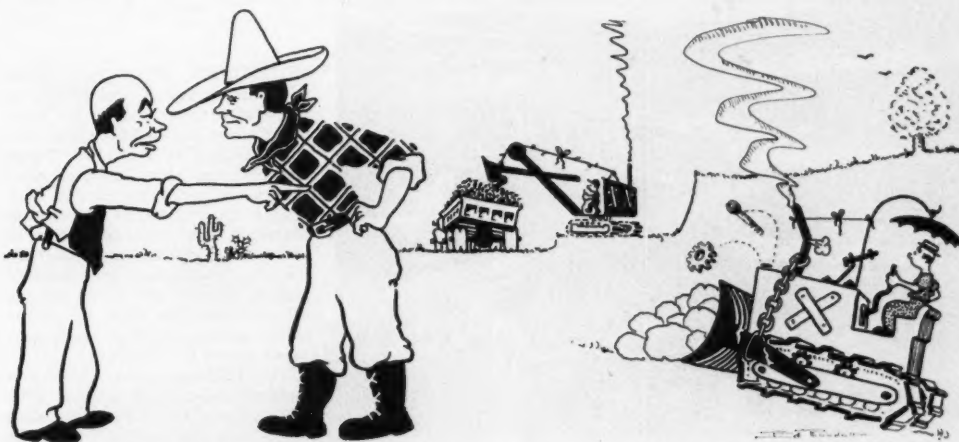
up, servicing and minor repair of each unit.

Equipment pays off only when producing. Therefore, it makes sense to us to devote some daily care to the machines to keep them at work. Closer supervision of operators is also warranted. Even the "knothead" operators can be taught to run their units properly and to report minor troubles at once.

And listen, you contractors. The day is past when you can run a machine into the shop this morning and expect to have it back on the job tomorrow. Shop mechanics are getting scarce, the draft is already crippling many distributor operations. And parts supply is getting critical. Campbell reports that 95% of his parts orders are being filled, but the missing 5% is enough to hold a machine on the shop floor for days and even weeks.

Next month we devote our entire issue to equipment maintenance, showing how the more progressive contractors are taking care of their equipment. Watch for that special July issue; you might learn something that will save you money.

Rich



SPIKE SEZ: See what I mean! You contractors are killing your equipment by neglect. Those rigs will soon be in the shop for major repairs—and maybe perhaps you won't be able to get the parts for them

right away. Machines in the shop never make any money for the owner—if you want to stay in business, you'd better keep 'em out on the job where they pay off.



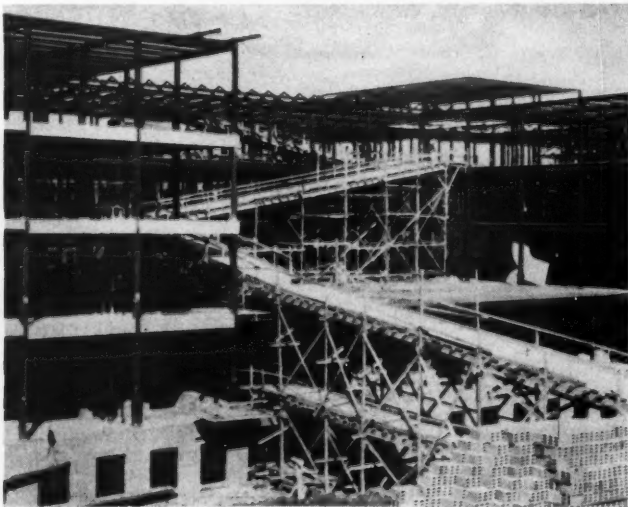
BIG LOADS such as these 2x12 planks 16 ft long are easily handled by motorized buggies on Capitol Annex job in Kentucky. Grade on

wooden highways over which they travel to building's six levels is as much as 25%, but carriers take it in stride.

Buggies Replace Hoists on Big Building

By **W. J. POUCHOT**

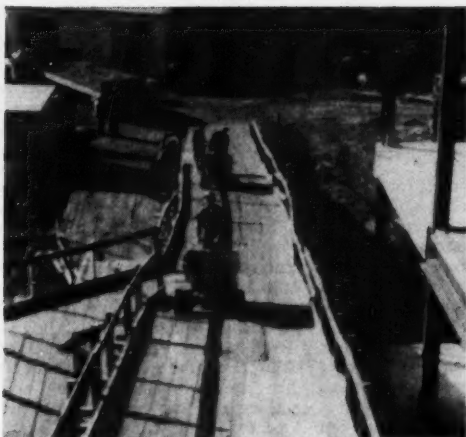
Superintendent
Struck Construction Co.
Louisville, Ky.



RAMP NETWORK starts from hillside at rear of building, leads down 18 ft to basement and first floor, and up 50 ft to other three floors and attic. Material storage areas and construction plant are also set up on mid-hill site near start of buggy ramps.

MOTORIZED BUGGIES riding wide timber ramps are taking the place of material hoists on Kentucky's new \$6,000,000 Capitol Annex Building at Frankfort. There the machines carry loads of more than a ton, negotiate 20 and 25% grades, and travel 68 ft between basement and attic. Indicative of the advantages of this material-handling method is the concrete cost of only \$4 per cu yd for the 2½-in. attic floor slab, which includes mixing, placing, and a prorated cost of the runways.

The building is a spread-out monumental type structure, 260x460 ft in plan, with four office floors plus basement and attic. Its steel frame is faced with stone on three sides, while light courts and rear elevation are face brick. Floors



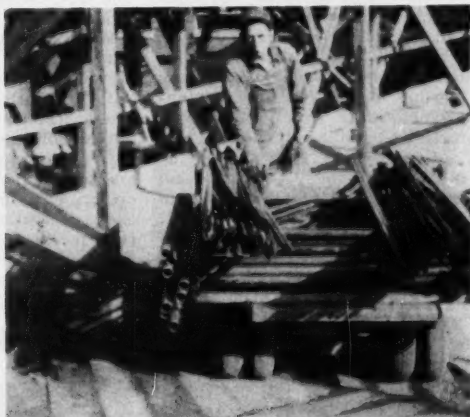
CONCRETE MIX is rushed from plant (background) to slab over strong ramps fitted with railings and toe boards for safety.



ATTIC SLAB is poured in tight quarters, but motorized buggy slips under steel roof framing to dump its load close to edge.



REINFORCING, a paper-backed wire mesh (Steealtex), is also carried. Ten-ft ramps leave plenty of room for two rigs to pass.



SCAFFOLDING, too, is easily moved around job by buggy. With platform extension, it has carried 20-ft lengths of 6-in. pipe.



BRICK, 300 to a load, is taken from storage near base of ramp. These two Moto-Bugs have more than day's work for one mason.



MORTAR is dumped into buggy for quick ride to masons. Mortar sand is dumped to plant from access road on the hill above.

are reinforced concrete or a concrete fill on top of Robertson steel Q-flooring.

All brick (820M), tile (500M), concrete (8,000 cu yd) and reinforcing steel are moved from the ground to point of use in the building by a fleet of 12 Kwik-Mix Moto-Bugs traveling over wooden ramps. The versatile machines also handle mortar, pipe, lumber and sections of scaffolding. For a spread-out job, this method has much to offer in smoothness and economy. There are no material hoists—consequently there are no engineers, no signalmen, no hooking on, no top and bottom crews, no waiting for the hoist, and no hoist breakdowns. Savings in breakage and chipping of such materials as glazed tile and face brick are halved by not being subjected to rehandling. On buildings where the horizontal spread is large, where the vertical lifts are relatively small, and where ramps are feasible, other important savings can be made over conventional material-handling methods.

A hill rises sharply behind the building, and the buggy ramps and the construction plant are set up to take advantage of this fact. From a hillside parking area at an elevation about halfway between the

building's first and second floors, the ramps serving the job run down to the basement (18 ft below) and up to the attic floor (50 ft above parking level). Turn-offs lead from the main ramps to the intermediate floors.

Ramps are 10 ft wide for most of the distance, which allows two buggies to pass comfortably. Framing and decking, generally of rough native hardwood, consist of 4x4-in. posts in bents 12 ft on center, 2x12 stringers, 4x4 joists on 2-ft centers, 2-in. decking, and 1x6 cross-bracing. The grade on the ramps is 20% or less, with the exception of the one to the basement, which has a grade of 25%. A buggy with a skillful operator, though, has taken eighteen 2x10-in. planks 18 ft long, weighing something over a ton, from basement to attic as fast as a man could walk.

When delivering concrete across unpoured floor slabs, the buggies travel on runways of 4x8-ft panels with 2x4 joists and 1-in. decking. These rest on low wood trestles with double 4x4 legs and 2x8 plank tops, which are not easily tipped and which will not punch through decking or forms under 1-ton loads. Space is left between the legs to clear reinforcing steel.

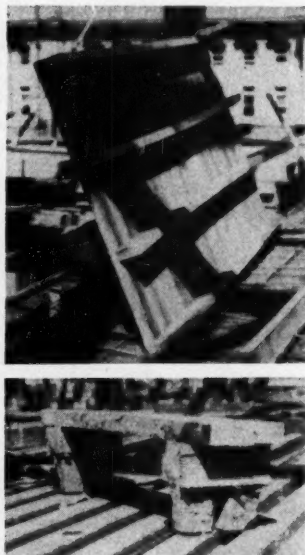
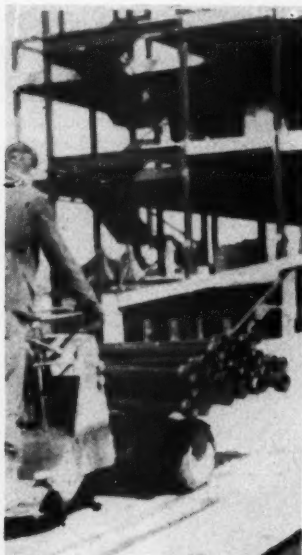
The concrete plant is also in the

parking area at the rear of the building. Here, too, are the mortar mixers with the cement house between, serving both operations. The concrete plant consists of C.M.C. weigh batcher, 40-ton bins and 16-S mixer; the mortar mixing plant has two Jaeger one-sack and one C.M.C. two-sack mixers, blocked high enough to feed directly into the Moto-Bugs. Aggregates for the concrete are dumped into the bins from an access road cut into the hill above the plant, and sand for mortar is dumped down the hillside to the mixers from the same road. Brick and tile are stored on the parking area, adjacent to the main ramp, leaving the other three sides of the building available for the cut stone operation, which is handled by crane.

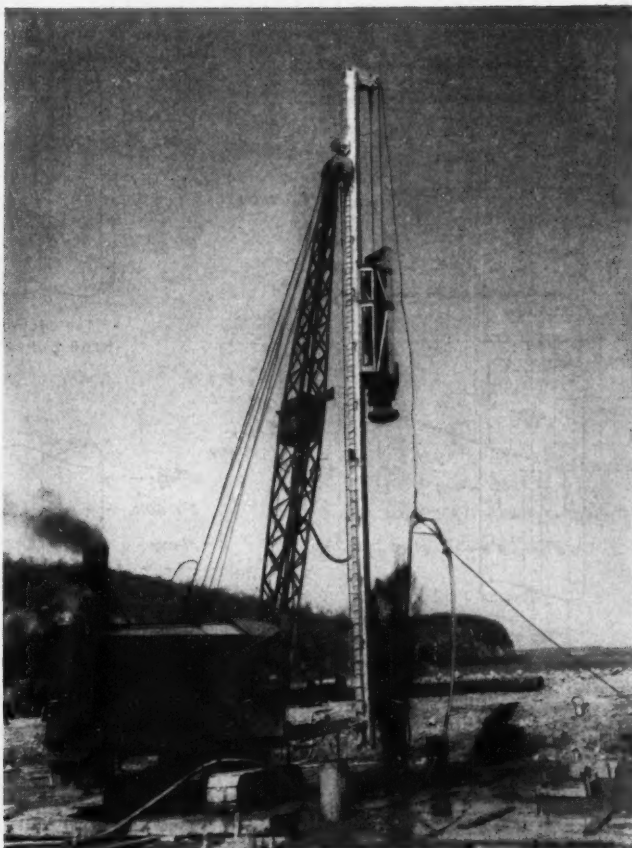
The Capitol Annex is being built for the state of Kentucky; J. B. Rieman, chief engineer. Merriwether-Marye & Associates, of Lexington, are architects. Contract for the structure is held by Struck Construction Co., Louisville, Ky. The writer designed the setup described and is contractor's superintendent. The story of the job, and examples of the mechanized material handling, are shown in the accompanying pictures.



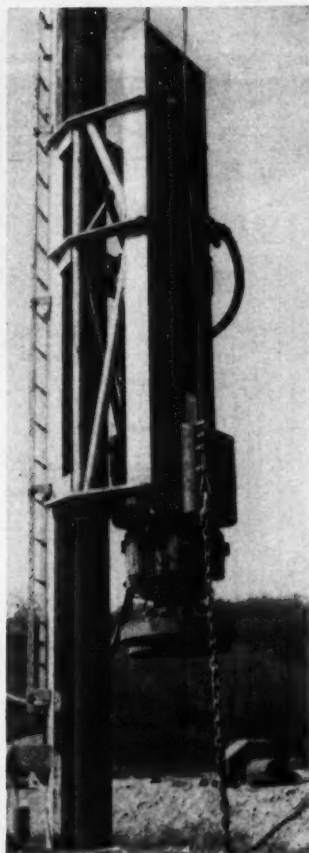
RE-STEEL AND SOIL PIPE start up ramp to keep rodmen and plumbers well supplied. Normally, separate buggy is used to carry reinforcing rods, but here (left) the rodman is hitch-riding his "forgets" on a buggy of concrete going to the attic floor slab.



ACCESSORIES for buggy travel are 4x8-ft runway panels (top) and wood trestles, that can carry loads of more than a ton.



SINGLE-STEM PILE LEAD designed and built by Drilled-In Caisson Corp., New York contractors, proves itself on an East Coast power-plant foundation job. In left photo, hammer has been raised after



driving a 30-in. dia steel caisson so section can be mucked out by jet. Right photo shows details of hammer carriage that rides on pipe-stem leads, guided by steel channel rails.

Piledriving Leads Go Modern—With Pipe

BY THROWING the book away and starting from scratch, Drilled-In Caisson Corp. has developed a new type of pile-driving lead with many advantages. Basically, it's just a single pipe stem on which slides a hammer in a carriage. But, despite its simplicity, the streamlined lead incorporates all the features that this heavy construction contractor's long and varied experience with ordinary leads taught him should be included for maximum economy and efficiency. The clean-looking and practical result is pictured and detailed herewith.

● **Low cost and weight**—The lead, all welded and 60 ft long, was built

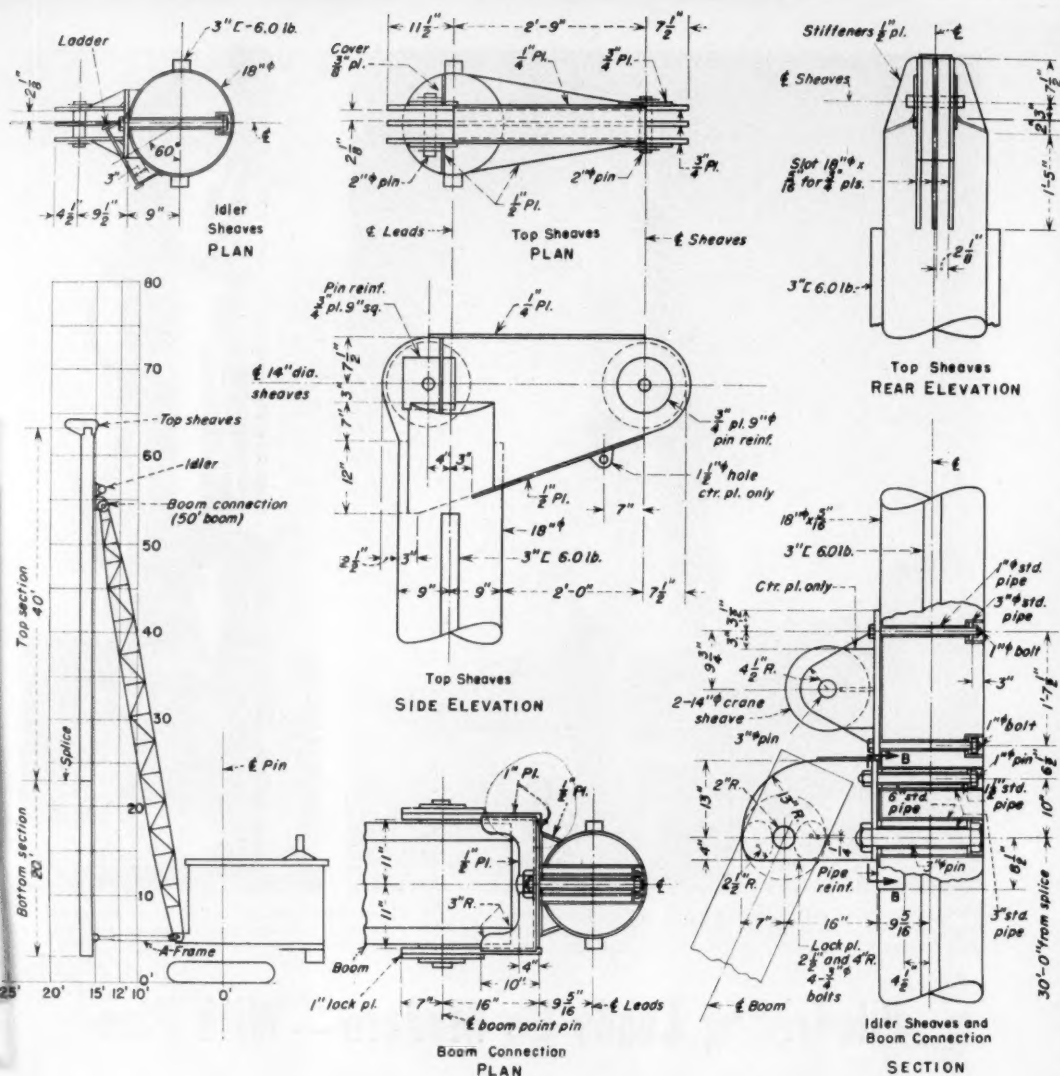
Streamlined Section Scores Seven Ways:

1. **Low Cost**
2. **Light Weight**
3. **High Rigidity**
4. **4-Way Batter**
5. **Large Capacity**
6. **Low Reach**
7. **Quick Assembly**

last year in the contractor's New York yard at a total cost of less than \$2,750. It weighs only 9,120 lb including the hammer carriage

(2,060 lb) and A-frame spreader (640 lb) but without hammer.

● **High rigidity**—Main member is an 18-in. dia steel pipe with 5/16-in. wall. This makes an extremely rigid lead, so subsurface obstructions encountered during driving can be fought by pushing sideways—a difficult task with ordinary leads, which, pound for pound, are much more limber. Welded along each side of the pipe are 3-in. channels, kept well greased, that serve as rails for a sliding frame that carries the hammer. Welded near the rear of the pipe is a ladder for the monkey. A sturdy telescopic A-frame braces the base of the



PLAN OF LEAD shows construction details. Note rigid method of bolting idler sheaves and boom connection to pipe stem. Hole

lead to the pile-driving crane (here an Osgood steam rig with 50-ft boom and 45-hp boiler supplying a Vulcan No. 1 hammer).

● **4-way batter** — The lead can drive piles on a batter in any of four directions. Fore and aft batter is taken care of by adjusting the telescopic A-frame, rotation taking place about the 4-in. boom-point pin. For sideways batter, the A-frame is unbolted and the lead rotated about the 3-in. pin that holds it to the boom-point connection.

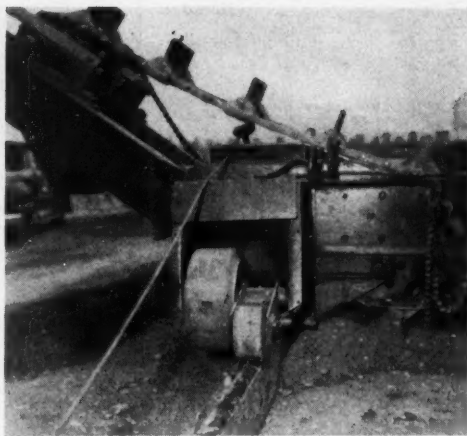
● **Large capacity** — Projecting ahead of the lead proper is the hammer carriage. Vertical 4-in. channels at its rear corners fit over and slide along the 3-in. channels on the main pipe. The front part of the carriage is much like a section from a normal set of C-type leads, but is only long enough to hold the hammer. The latter fits between two 8-in. WF-beam guide rails, with its anvil and drive head extending below. Because the base of the hammer is in front of the pipe leads and beneath the car-

riage, it is completely in the clear. Therefore, it can be centered directly over a larger pile section than would fit between the guides of comparable ordinary leads. This rig, for example, can drive piles as large as 42 in. across. With about 48 ft between base of crawlers and bottom of high hammer, the length of pile it can handle is the same as for a standard type lead of equal height.

● **Low reach** — Although the carriage guides the hammer, the ham-



PNEUMATIC HAMMER makes short work of driving Blaw-Knox edge-form pins. Workman covers 200-ft run, then drives pickup truck, towing 105-cfm compressor behind pickup to next setup point. Right on his heels comes a . . .



. . . **SUBGRADER** which has been rigged up to throw dirt from either end, while traveling back or forth. On every rig possible, both flanged and rubber-shod wheels are attached for quick change-over.

BALTIMORE EXPRESSWAY: A Short Paving Job

TAKE A WALK with us along the length of this ordinary-looking paving job and we'll guarantee that the old adage of not judging a book by its cover was never truer. It's a mile-and-a-quarter, six-lane job in the southern section of Baltimore, tying in with the Washington-Baltimore expressway and being handled by the inventing-est

bunch of construction stiffes ever, working for the home-town outfit of C. J. Langenfelder & Son Inc.

From the distance it seems to be a work-going-on-as-usual job, but actually it boasts an array of ideas and inventions that will send you away with a great deal of respect for the workmen and supervisors.

First off, there's an apparently

new type of truck, with a swinging crane arm. As it crawls forward slowly, it's depositing edge forms on the ground within inches of their ultimate in-place positions. As you look, however, it drops the last form, turns quickly and zips off toward the other end of the job. We'll see more of that later.

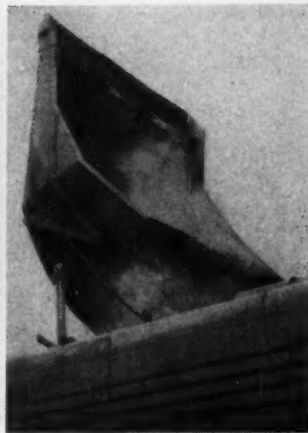
Almost as quickly as they're unloaded, these Blaw-Knox forms are slid into place by a bunch of laborers, and checked by a transitman and rodman. You'll notice that they're not driving the steel pins very deep into the ground but just giving them a few taps to hold them erect. Hardly a good way to secure them, you think, and suddenly we come across a small pickup truck towing a two-wheel, 105-cfm compressor with 100 ft of hose and an air hammer. This hammer has a special head, and the pickup driver is pounding the pins home at the rate of about twelve a minute. Lots less effort that way.

Subgrader Works Two Ways

Next we see a subgrader coming toward us, straddling the line of edge forms and a previously poured slab, and spewing fill along what will eventually be the median strip. This is a new type of machine with throw-offs on each end and it can evidently work either way. Closer investigation shows it



WATER TANK DRIVER lends a hand to paving operations, while Rex paver tows truck along with 1/2-in. cable, 6 ft shorter than delivery hose. When paver backs up for second pass, truck cannot pull too far ahead. Result: No hose breaks from pulling or kinking up; no torn threads.



JOB-MADE, 4-section blade can be hooked or unhooked from Huber roller in a jiffy. Hydraulic plunger (arrow) lifts blade for return, then lowers it again. Blades are adjustable for crown, pitch or superelevation. To free clinging cement from paver skip, slappers (right) give resounding smack each time lift is made.

But Long on Good Ideas

By JAMES CONNOLLY, Associate Editor

once was an ordinary Blaw-Knox subgrader, but it's now the brain-child of a master mechanic and his aides, who have added a couple of extra gears, a clutch and twelve more blades. Now with the flip of a lever, it can work either way.

Roller Pulls Blade

Right on the heels of the subgrader comes a small Huber roller, compacting the bed. This is rather common, you think, but wait until you see the blade behind it. This is another home-made rig, riding the rail and slab just like the rest of the equipment. It has a four-section blade which removes any humps left by the roller. By pumping a hand-operated hydraulic plunger, the blade is lifted clear; then the rig is pushed back by the roller, the blade dropped and another pass taken. In most cases, the second pass is the final one. Right now they've just left a curve and are starting out on a straight-away, so the adjustable blades are being set and clamped accordingly.

A line of batch trucks precedes the big Rex double-drum paver and from the frequency of their arrivals and departures, that Model 201 rig must be literally eating it up. After a few questions, and answers from the job superintendent, we find it's doing just that—60 batches an hour, 600 batches each

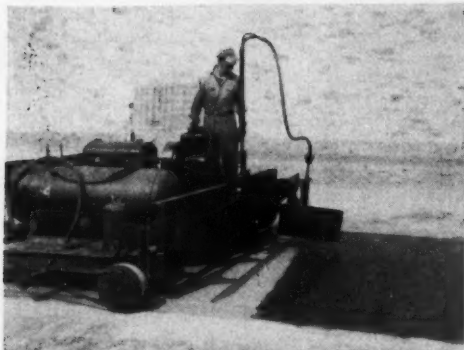
10-hr day. The skip has the usual steel wheel stops which allows each batch to be dropped as deep into the skip as possible (thus easing the strain on the lift cables) and also has an arrangement of chains and steel plates for slapping the skip at its uppermost position to shake free all the cement in each batch. A ½-in. wire rope is per-

manently fastened to the rear end of the paver and runs up to the rear of a water wagon. This cable is 6 ft shorter than the supply hose, and as the rig moves ahead, it pulls the truck backward with it. Thus, the hose is never pulled or strained in any way during the moves.

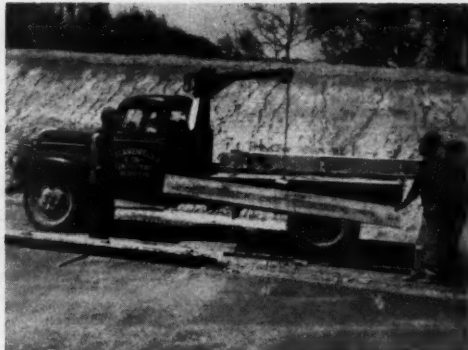
First lift of the 10-in. slab is 7



FULL EDGES are assured with two Jackson edge vibrators hanging off rear end of Blaw-Knox spreader, and hooked through straps and cables to handy brake lever (arrow). Generator behind man supplies current; will be removed and another tied in with spreader motor when job ends.



CHAIN TRAVEL on rear of modified Flexplane rig carries spray nozzle back and forth to spread layer of Curecrete on fresh slab. Note spray control, 100-gal tank and spray baffles.



EDGE FORM TRUCK is biggest labor saver on job. Driver controls two levers, one for lift and one for swing; stacks three tiers with ten forms to a tier. Process is reversed at other end of line.

in. Then reinforcing screens are overlapped in place and the top 3 in. placed in a second pass. Two Jackson vibrators hang off the rear end of the Blaw-Knox spreader, one just inside each edge to prevent any voids. These are connected through straps and small wire ropes to a brake lever within easy reach of the spreader operator, and they hang into only the top layer.

Next along the line are a Blaw-Knox transverse screed and a Koehring longitudinal screed; then another slick home-made rig. This is a machine that sprays a heavy black curing liquid, called Curecrete on the freshly screeded slab.

Using a Flexplane frame, the same ingenious mechanics hooked up a pump to the motor, clamped a 100-gal tank aboard, added a few adjustable nozzles and valves, and the rig lays down overlapping transverse layers of fast-drying curing liquid as it works its way slowly along the line behind the paving equipment. Not a square inch of surface is missed.

Last, but far from least, is the edge form truck we saw clear up at the other end of the job. Here it is, loading three tiers of forms, with ten forms in each tier. The window has been removed from behind the driver, and through the opening intrude two levers, one for

lifting and one for swing control.

These run down to the power takeoff of the truck, and the rig is the pride and joy of the men. It contains a Braydon winch from a tractor, a Blaw-Knox hi-pressure pump and swing control, and Jeep clutch and assorted parts and gears from other machines. The swing lever is a double-action affair, pushed to the right or left for travel in either direction.

The remaining lever, if pulled toward the driver, engages a clutch for lifting. When the form is at the correct height, the lever is thrown quickly through the neutral central position to the farther end of its travel where it engages a brake to hold the load aloft. When brought in to the center position, neither is engaged, and the weight on the end of the line pulls the double hook down for the next grab. In this way the driver stays in his seat, and loads or unloads with two incorporated hand-levers, instead of a separate one for each movement along with foot brakes or dogs. As we stand and watch, the crew loads thirty edge forms in 5 min; then take off toward the other end of the job to reverse the process.

Project Personnel

The job combines two contracts totaling 6,800-ft, and the 6-lane, 10-in. slab will use a total of 62,700 cu yd. It is a Federal-aid project for the City of Baltimore, Dept. of Public Works, Bureau of Highways. John Woolfolk is paving superintendent for the C. J. Langenfelter Co. and John Kammerer is master mechanic and equipment superintendent.

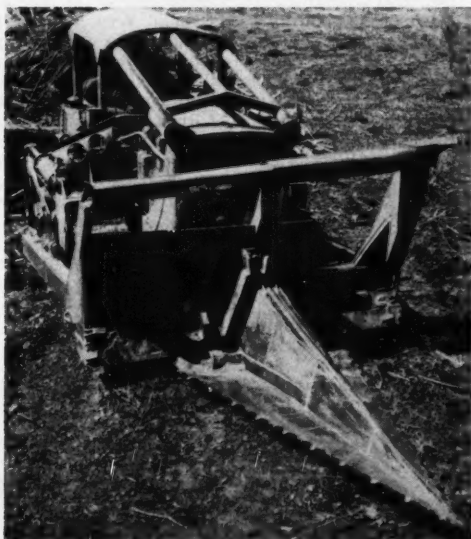


NOON HOUR finds everybody resting and eating except gasoline truckmen who take opportunity of shut-down time to gas rig. Operator and oiler stay each night 1 to 2 hr to service rig; change cleaners after every shift, oil and oil filters every 60 hr.



In Wyoming, a 6-ft V-blade fells trees with a single swipe as this . . .

Saw-Nose Cat Clears 1¼ Acres per Hour



BIG BLADE is bolted to dozer on Cat D7. Sturdy steel frame protects rig and operator from falling trees.—USBR photos



BIG TREE is quickly cut off close to ground as saw is forced through trunk. Clean, low cut lessens subsequent clean-up.

A CAT with a nose like a sawfish would be a biological spectacle. But when the cat's a Caterpillar bulldozer and its nose is a pointed 6-ft saw blade, it becomes a spectacular land-clearing combination that mows down 24-in. trees in one pass to clear as much as 10 acres in an 8-hr shift. And, by sticking their noses solely into their own business—namely, the cottonwoods on the Boysen Reservoir site—a fleet of the nosy dozers is completing their 12,700-acre clearing job 6 months ahead of schedule.

The big saw-nose that projects ahead of the bull-

dozer has several variations at Boysen, where six clearing contractors are using slightly different saw blades and arrangements of teeth. Generally, the saw is bolted to the center of the dozer blade and consists of a flat triangular steel plate with toothed cutting edges, and a heavy stiffening rib running up the center of its 6-ft length. Some of the saw blades are finely cut, with teeth kept sharp; others are coarser and work with a tearing action, so do not require sharpening.

Operation of the saw is simple. The bulldozer operator guides his machine so the saw strikes the tree



DOWNED TIMBER and brush are collected by D7 fitted with rake whose heavy tines extend 8 in. below dozer blade. Bureau is salvaging 20,000 trees at Boysen, 4 to 12 in. in dia, for use on a nearby

erosion-control program; all others with no commercial value are burned with the brush. This machine is owned by Asbell Brothers, one of seven contractors completing job 6 months early.

near the tip of the cutting edge. Driving the rig ahead, he forces the saw through the trunk to drop, with one stroke, cottonwood trees up to 24 in. in dia. Because the blade can be set to cut at ground level, final clean-up operations are lessened considerably.

A single machine of this type can clear as much as 5 acres of dense timber in 8 hr, and production is twice that figure in areas with less cover. It is estimated that each of the saw-equipped rigs fells more trees than could five chain-saw crews. And, with 12,-700 acres to be cleared (of which 3,600 is classified as heavy timber) the nose dozers are the main reasons why the job will be completed this month, rather than next December 31st as originally scheduled.

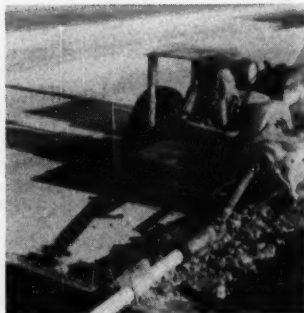
Six contracting firms are presently engaged in the clearing operations at Boysen Dam, a U. S. Bureau of Reclamation multiple-purpose project on the Bighorn River 20 mi south of Thermopolis, Wyo. One of the contractors, Mid-States Construction Co. of Chisholm, Minn., introduced the saw-nosed machines, and the others were quick to adopt the tool. These are: Asbell Brothers, Riverton, Wyo.; Lichty Construction Co. and Brasel & Whitehead, also of Riverton; A. M. Conrad, Big Piney, Wyo.; Lindquist, Olson & Co., Cambridge, Minn.; and Watkins & Pennington, Fort Collins, Colo., whose saw-dozers are pictured here. Similar rigs helped Denver's C. L. Hubner Co. complete their contract recently.

Power Spinner Twists Pipe Joints Tight in a Hurry



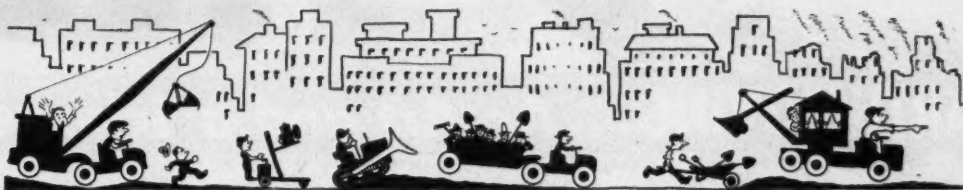
HAND TIGHTENING the joints of 2-in. galvanized pipe was too slow for Justice Dunn Co. on a multi-mile job in Oakland, Calif. Instead, the Emerville contractor rigged up a powered trailer that rides the highway and couples four lengths at a time as they are installed in a shallow trench just behind curb line.

The trailer carries a small gasoline-powered generator that drives the gearbox from an old Rigid pipe-threading machine. The threading chuck has been replaced by one with lathe-type gripping jaws that hold an automobile drive shaft by its universal joint. The uni-



versal joint at the other end of the shaft is welded to a short pipe that acts, in part, as a supporting sleeve for the pipe to be turned. To the sleeve is welded a plate on which the head of a stillson wrench is secured.

In operation, four lengths of pipe are laid in the trench and loosely screwed together, with the end held above the ditch by a 2x4 with spikes as retainers. The pipe end is slipped into the machine's sleeve, the stillson is tightened, and the clutch is thrown to turn and tighten the string of pipe in jig time.—From Geo. F. Burnley



Contractors Rally for Civil Defense

AS OUR MARCH editorial page pointed out, contractors, because of their equipment, manpower and know-how are willing and able to take a lead in civil defense. If the dreaded A-bomb falls in one of our major cities, construction crews, along with their machinery and equipment, should be the first in operation in disaster areas. Knowing this only too well, New York City is doing something about it. There the civil defense director and public works commissioner are reorganizing the Public Works Emergency Division, setting up control centers, listing all available equipment, manpower and materials, and in general preparing for almost any eventuality.

If the city is bombed, first off, tons of debris will have to be removed from streets even before emergency vehicles can reach damaged areas to remove the injured. Unsafe structures will have to be demolished, braced, or tunneled through. At the same time there will be the jobs of shutting off broken water, gas, and steam mains; checking exposed electric cables; possible construction of temporary shelters; and emergency repairs of streets, sewers and utilities. Illumination control will have to be handled also, in cooperation with the Department of Water Supply, Gas and Electricity; and finally, along with the Health Emergency Division, the PWED will assist in the removal of contaminating agents to the extent of flushing with water, spraying with liquid neutralizers, covering with

sand and chemical mixtures and employing new techniques peculiar to atomic warfare.

To start the ball rolling, the PWED had an organization meeting including representatives of utility companies and city groups, which ended in their wholehearted cooperation and subsequent enrollment of 20,000 and 30,000 volunteers respectively. Next came the engineering and contractors' association meetings with a view to enrolling technical help, which came as expected—from more than 1,000 individuals. In addition, six major contractor groups notified their members of the need for cooperative action, and blanks were mailed out on which they were requested to list their equipment. It is the largest inventory of its kind ever made. Everything from picks and shovels to cranes and compressors have been compiled in a master list with twenty major headings. Each type of equipment has been broken down into heavy, medium, and light; portable or stationary; rubber-tired or crawler; with or without winch, etc., and each has been assigned a code number and entered on a punched IBM card.

All equipment belonging to each contractor has been listed and broken down where necessary to each of his several yards. Other lists show on-hand inventory of all types of equipment and which contractor has what. Still others list it by geographical location. On top of all this, information has been provided by each contractor

showing the name, home address and telephone number of master mechanics, chief engineers and any other personnel with direct knowledge of the equipment and supplies his company owns.

There are 800 classifications of equipment belonging to more than 500 general and specialty contractors. In all, close to 60,000—that's right, sixty thousand—pieces of construction equipment have been coded and indexed with 2,000 cross-references. These are assigned to 790 mobilization points including 60 New York City housing projects, 100 Sanitation Department headquarters, 15 Park Department centers and various contractor yards. If a piece of equipment is moved to another job out of the city, or to a different location within—or if a backhoe is transformed into a shovel or clamshell—the information is phoned in or noted on a printed, addressed postcard and the change immediately made in the IBM card. Thus with a minimum effort on the part of the cooperating contractors all equipment relocations, major breakdowns, transfers, etc., are kept as up-to-date as possible.

Periodically, new lists are distributed to borough offices and control centers, for a well-rounded program of mutual aid. At this writing the Division knows the exact location of 7,885 motor vehicles, 471 trailers, 221 truck-mounted cranes and 448 tractors and bulldozers. Small tools already include 13,602 shovels, 6,775 picks, (Continued on page 106)





EARTHMOVING...An Art and a Science

6. Production and Cost Estimates

BY DAN K. HEIPLE, Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, Ill.

This is the sixth of a series of articles on the fundamental principles of earthmoving. Sections on earthmoving history, job analysis, equipment selection, ownership and operating costs, factors affecting production, and application of bulldozers, scrapers and rippers have already been published in our last four issues. Still to come are comprehensive articles on such subjects as equipment maintenance and repair, dirt compaction, and application of other types of equipment.—THE EDITOR

PRODUCTION ESTIMATES for heavy equipment can be made by several methods, depending on the degree of accuracy required. Four will be discussed here: Direct Computation; Tabular Method; Slide Rule Method; "Guesstimating."

The direct method of computation is the most accurate. It involves an evaluation of each of the factors affecting production (discussed in detail in last month's article in this series) to determine the pay yards or tons contained in the load and the number of loads per hr the equipment will handle.

To arrive at pay yd per load, the heaped capacity of the unit is reduced by the swell factor for the material being handled. Thus, a

20-cu yd scraper working in clay having a factor of 70% would carry approximately 14 pay yd per load. This figure assumes that sufficient power is available to load the scraper full. If this power does not exist, it will be necessary to reduce the load. Under most conditions, 1 lb of drawbar pull per lb of material to be loaded is more than sufficient to accomplish loading in 1 min or less.

The pull of gravity on favorable grades supplies 20 lb of drawbar pull per gross ton of equipment for each 1% of grade, to assist loading or pulling power. Similarly, grade resistance on adverse grades will subtract, in like amount, from drawbar pull. Load-

ing on a 10% favorable grade, for example, 50 tons of prime mover, scraper, pusher tractor and load have a gain of 20x10x50, or 10,000 lb of drawbar pull.

Having estimated the load, the number of loads delivered hourly to the fill depends on the job efficiency, the load time, spread or dump time, and the travel time.

It has been established that a well-organized and supervised job will result in approximately 50 work-productive min each hr. This is a job efficiency of 83%.

Load, spread (dump), turns and acceleration are considered as a unit because they are relatively unaffected by length of haul and grades and are called "fixed time." For a sufficiently powered scraper unit, the approximate time consumed by each of these maneuvers is:

Loading	1.0-1.5 min
Spreading or dumping....	0.5
Two turns (¼ min each)	0.5
Shifting and acceleration	0.5-1.0

TOTAL FIXED TIME....2.5-3.5 min
(Shovel loading of hauling units depends basically on the size of the loading shovel and the degree of swing, and must be considered separately.)

Computation of travel time requires a knowledge of the speeds, power, weight of the equipment

with its load, grades, condition of roadway, and length of haul.

To determine the speed of travel, the power available and needed to haul must be known. Roadway surfaces and grades are the power-consuming factors. If rim-pull is not available, but the horsepower and speed are known, it may be reasonably estimated by applying the formula:

$$\text{Rim-pull} = \frac{375 \times \text{HP} \times \text{Efficiency}}{\text{Speed in MPH}}$$

Efficiency in most two-wheel prime movers is approximately 85%. Thus, rim-pull in all gears for a 186-hp unit at each speed would be:

1st gear = $\frac{375 \times 186 \times 85}{3.41 \text{ mph}}$	= 17,400 lb
2nd gear (7.25 mph)	8,200 lb
3rd gear (12.63 mph)	4,700 lb
4th gear (22.28 mph)	2,660 lb
5th gear (35.03 mph)	1,695 lb

Lugging of the engine in all gears will increase rim-pull for that gear, but at a lower speed than the governed speed indicated. The ability to lug will keep the machine in the higher gear in marginal cases. In low gear, this figure may exceed the maximum usable rim-pull of the machine, limited by tractive efficiency. Any power in excess of maximum usable rim-pull serves only to spin the wheels.

Considering the prime mover for which the above rim-pulls have been computed, with a 15-cu yd scraper, approximately 34,000 lb empty weight, and a 50-50 loaded-weight distribution on the axles, compute production under the following conditions:

HAUL DISTANCE: 3,400 ft one way

GRADES:

- 1,600 ft—0%
- 1,200 ft—9% favorable on haul
- 600 ft—6% adverse on haul



DON'T FORGET to add pro-rated cost of push-tractor when figuring yardage cost. Here, four scrapers keep one pusher humping on Lane Construction Co. job in Massachusetts.

MATERIAL HANDLED: Common earth
80% swell factor—2,300 lb per cu yd
Load = 15 yd x 80% = 12 pay yd
WEIGHT OF LOAD = 12 x 2,300 = 27,600 lb
HAUL ROAD: Good construction road—70 lb per ton rolling resistance—60% tractive efficiency

Time Computation

1. FIXED TIME:

Load	1.00 min
Spread	0.50
Turns	0.50
Accelerate, shift	0.50
Total Fixed Time	2.50 min

2. HAUL, LOADED:

Gross weight = 30.8 tons (34,000-lb machine plus 27,600-lb load), or say 31 tons. Drive tires carry 50% of the gross weight, so 31,000 lb x 60% tractive efficiency = 18,600 lb maximum usable rim-pull. Any loaded requirement in excess of this would result in a condition of tire slip and "no go" for the unit, if power were available. In this case, however, maximum rim-pull available from the prime mover is 17,400 lb, so this lower figure is used.

(a) 1,600 ft of 0% grade

Required rim-pull to move 31-ton gross weight:
Rolling resistance = 70 lb per ton x 31 = 2,170 lb
Acceleration = 20 lb per ton x 31 = 620
Grade—0% = —

Total rim-pull required: 2,790 lb
Rim-pull available—
4th gear = 2,660 lb
Rim-pull available—
3rd gear = 4,700 lb
Haul 1,600 ft in 4th gear, lugging slightly, say at 17 mph:

$$\text{Time} = \frac{\text{Distance (ft)}}{\text{Speed (mph)} \times 88} = \frac{1,600}{17 \times 88} = 1.07 \text{ min}$$

(b) 1,200 ft of 9% favorable grade

Required rim-pull to overcome rolling resistance and for acceleration, as before, = 2,790 lb

Added rim-pull due to favorable 9% grade = $20 \times 9 \times 31 = 5,580 \text{ lb}$
Net required rim-pull is zero since effect of grade overcomes rolling resistance.
Available rim-pull in fifth gear is 1,695 lb.

Haul 1,200 ft in 5th gear but slightly under maximum speed, due to operator. Say at 30 mph:

$$\text{Time} = \frac{1,200}{30 \times 88} = 0.45 \text{ min}$$

(c) 600 ft of 6% adverse grade

Required rim-pull for rolling resistance and acceleration is still = 2,790 lb

Grade resistance = $20 \times 6 \times 31 = 3,720$

Total required rim-pull = 6,510 lb

Rim-pull available—
3rd gear = 4,700 lb

Rim-pull available—
2nd gear = 8,200 lb

Haul 600 ft in 2nd gear at 7.25 mph:

$$\text{Time} = \frac{600}{7.25 \times 88} = 0.94 \text{ min}$$

Total Haul Time = 1.07 + 0.45 + 0.94 = 2.46 min

3. RETURN HAUL, EMPTY:

Drive tires carry 60% of weight when empty, or 60% x 34,000 lb = 20,400 lb. Then, 20,400 lb x 60% tractive efficiency = 12,240 lb maximum usable rim-pull. Any requirement in excess of this will result in a condition of tire slip and "no go" for the unit.

(a) 600 ft of 6% favorable grade

Required rim-pull for total empty weight of 17 tons:

Rolling resistance = 70 lb per ton x 17 = 1,190 lb

Acceleration = 20 lb per ton x 17 = 340

Total required rim-pull: 1,530 lb

Added rim-pull due to favorable 6% grade = $20 \times 6 \times 17 = 2,040 \text{ lb}$

Total required rim-pull is zero since grade more than offsets rolling resistance.

Return 600 ft in 5th gear at 30 mph, as in haul:

$$\text{Time} = \frac{600}{30 \times 88} = 0.23 \text{ min}$$

(b) 1,200 ft of 9% adverse grade

Required rim-pull for rolling resistance and acceleration, as above, = 1,530 lb

Grade resistance = $20 \times 9 \times 17 = 3,060$

Total required rim-pull = 4,590 lb

Rim-pull in 4th gear = 2,660 lb

Rim-pull in 3rd gear = 4,700 lb

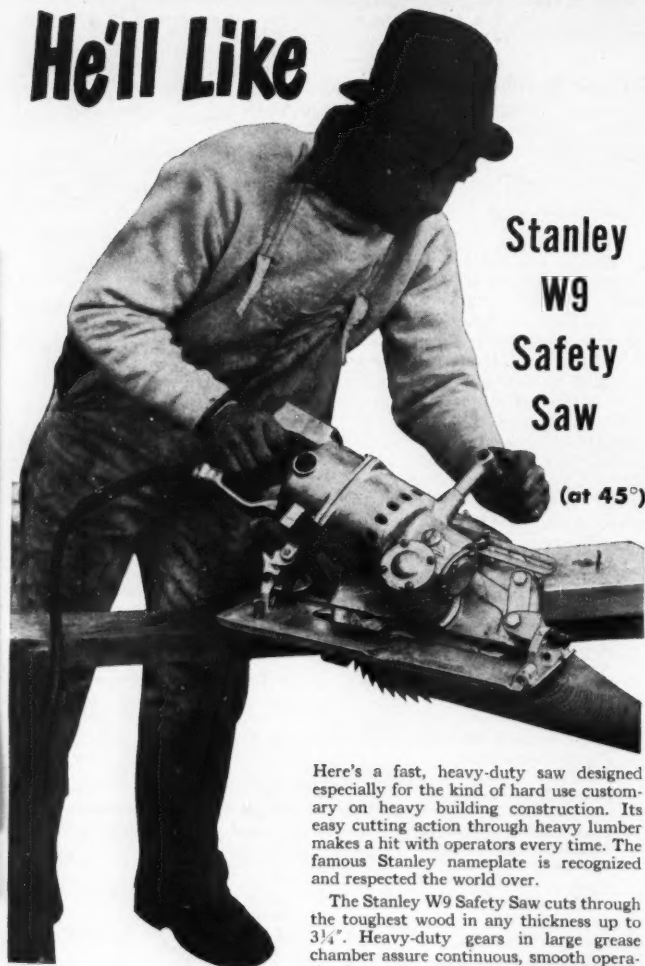
Return 1,200 ft in 3rd gear at 12.63 mph:

$$\text{Time} = \frac{1,200}{12.63 \times 88} = 1.08 \text{ min}$$

(c) 1,600 ft of 0% grade

Required rim-pull for rolling resistance and acceleration = 1,530 lb

Give Him a Power Saw He'll Like



**Stanley
W9
Safety
Saw**
(at 45°)

Here's a fast, heavy-duty saw designed especially for the kind of hard use customary on heavy building construction. Its easy cutting action through heavy lumber makes a hit with operators every time. The famous Stanley nameplate is recognized and respected the world over.

The Stanley W9 Safety Saw cuts through the toughest wood in any thickness up to 3 1/4". Heavy-duty gears in large grease chamber assure continuous, smooth operation in any position. Precision ball bearings throughout. Simple, secure adjustments for depth-of-cut and beveling angles from 90° to 45°. Telescopic safety guard protects operator from cutting edge of blade. Supplied with sturdy metal carrying case and ripping gauge.

See the W9 Saw at your tool distributor's or write for detailed literature on the W9 or other Stanley Saws, to Stanley Electric Tools, 437 Myrtle St., New Britain, Conn.



HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

Rim-pull in 5th gear = 1,695 lb
Return 1,600 ft in 5th gear at
30 mph, as in haul:
Time = $\frac{1,600}{30 \times 88} = 0.61$ min

Total Return Time =
0.23 + 1.08 + 0.61 = 1.92 min

Total Cycle Time = Fixed
+ Haul + Return = 2.50 +
2.46 + 1.92 = 6.88 min

Trips per 50-min hr (83%
operating efficiency)
50 ÷ 6.88 = 7.26

Pay yd per trip = 12 cu yd

Pay yd per hr per scraper
= 7.26 x 12 = 87.1 cu yd

Correctly estimating production and equipment performance depends upon accurately estimating and properly applying all the factors affecting performance, ie grades, rolling resistance, tractive efficiency, weight of material hauled, haul distance and efficiency. Once all factors are fully understood, however, some may be safely ignored in many calculations. For instance, in the previous example, tractive efficiency was not a governing factor. Neither was it necessary to compute rim-pull for the downhill hauls. Knowledge of equipment and good judgment could have saved computation of these items. In marginal cases it pays to figure!

The human factor is introduced into all the variables so that each estimate should be only as accurate as the judgment of the individual who prepared it. But errors in estimating quite often cancel one another, resulting in amazing accuracy. That they can also be additive is richly testified to by the number of contractors who have lost and are losing sizable sums on one job.

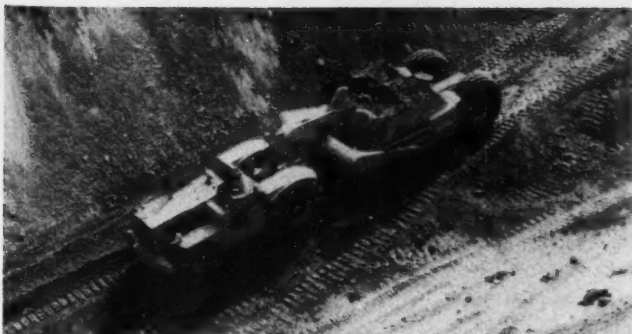
To complete the estimate down to cost per cu yd, the ownership and operating costs must be known or also estimated. (These were discussed in Chapter 4 of this series, published in April). For the unit used in the foregoing example, assume the following:

List price (fob plant)	\$23,250
Freight	623

Delivered price	\$23,873
Retail tire replacement cost	4,145

Delivered price less tires	\$19,728
Depreciation life of scraper—10,000 hr	

OWNERSHIP COSTS PER HR	
Depreciation (straight line less tires)	\$ 1.97
Interest, insurance, taxes (on average investment)	.71
Total	\$ 2.68



THE PULL OF GRAVITY on this downgrade haul more than offsets rolling resistance for machine of Louis Biasotti & Son, Stockton, on highway project in California.

HOURLY OPERATING COSTS

Operator's wages	\$ 2.00
Fuel (at 14¢ per gal)	.70
Lubrication (50% fuel cost)	.35
Maintenance and repair	1.87
Blades and cable	.30
Tires	.70
Total	\$ 5.92
Total hourly ownership and operating costs	\$ 8.60

The above costs include only the items applicable to operation of equipment. No provision has been made for overhead, supervision or profit since these vary with the individual contractor.

With production and hourly costs determined, it is a simple matter to arrive at the cost per cu yd.

Hourly ownership and operating cost	\$ 8.60
Hourly production (one unit)	87.1 cu yd
Cost per cu yd	9.9¢

Costs for a pusher tractor must now be added. The pusher cycle of operation starts with the beginning of one load and ends with the beginning of the next, including both loading and maneuvering. The average time consumed in this work is approximately 2 min per cycle but can be reduced to 1.5 min by proper loading methods and fast pushers. Of this time, 1 min is required to load in approximately 100 ft, and 0.5 min to position behind the next scraper.

The number of scrapers any one pusher will handle is determined by: Complete cycle time of the scraper in min, divided by the cycle time of the pusher in min. In the scraper example given, the cycle time was 6.88 min. On this haul, then, the maximum number of scrapers a pusher can handle with a cycle of 1.5 min is $6.88 \div 1.5 = 4.6$ scrapers. Five would mean a short scraper wait, four a short pusher wait. So let's say four

scrapers will be handled by one pusher.

Estimated costs per hr of owning and operating the pusher are computed in the same manner as for the scraper. For a typical unit these costs might be \$8.40. But the total hourly cost of the pusher must be pro-rated to four scrapers, so:

Pusher cost per scraper	
= $\$8.40 \div 4$	= \$2.10
Hourly scraper production—one unit	87.1 cu yd
Pushing cost per yd	2.4¢
Scraper cost per cu yd	9.9¢
Total cost per cu yd	12.3¢

These are direct costs. To them must also be added motor patrols or sprinklers used on haul roads, and rooters in the cut, pro-rated in a like manner.

Production and Costs With Hauling Units

Hauling-unit production and costs are figured and estimated in practically the same way as scraper production and costs. It differs, however, in that the loading unit or excavator has a direct bearing upon the production obtained and the resulting costs. Because the excavator (shovel, dragline, clamshell, loader, etc.) generally represents a large, long-term investment with a production capacity that generally cannot be changed during its lifetime, the hauling fleet must be made up of units which can be increased or decreased in numbers and size to fit the current operations.

Estimating Production:

Computing of hauling-unit production will not differ from that of scraper production except in fixed time. Generally speaking, only the load and dump times need be changed. The load time is almost



IT'S BIGGER
THAN YOU THINK!

**SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS**
18C, 30C, 50C and 80C

Super-Vulcan drives piles down faster, easier, and with savings in costs. Twice the blows per minute does the job. And each blow requires 25 to 35 per cent less steam.

Other Super-Vulcan points to consider are rugged strength, durability, simple design, positive action. Together with easy and inexpensive operation, these Super-Vulcan features enable you to drive more piles per dollar.

For added economy, the open-type fits the same loads and uses the same accessories as the Vulcan Single-Acting hammers. Write for full details.



Sizes: 18C—30C
50C and 80C
meet all needs.



UP TO 60% SAVINGS ON CONCRETE FORMING

with **Gates CONCRETE FORM TIES**

From the beginning of the form, the Gates method starts producing economies in time and materials.



IN DENVER—OVER 80% OF ALL HOME BUILDERS USE GATES FORM TIES

The simplicity of Gates Form Ties combined with the clean, even jobs which result from their use have made them mandatory in Denver.



CHECK THESE ADVANTAGES

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- ✓ MATERIAL SAVING
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WRITE TODAY for complete information on how Gates concrete form ties can make your jobs more profitable.

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It's simple...easy to use. Write now!
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CONCRETE FORM TIE
DIVISION



80 SO. GALAPAGO
DENVER, COLO.

EARTHMOVING . . . Continued



RESTRICTED TURNS in the cut add to the "fixed time" on this part of the New Jersey Turnpike, where East Hartford's Savin Construction Co. is moving 5,000,000 cu yd.

entirely dependent upon the capacity of the excavator and represents the actual time the unit stands beneath the excavator to receive its load. Dumping is usually faster with a wagon than with a scraper.

Factors affecting production are numerous, and a thorough discussion is too lengthy to be included here. But they will be taken up in a later article in this series. By oversimplifying the problem, however, an approximate rule-of-thumb gives an hourly loading rate of 100 to 125 times the bucket capacity in good digging and short swings.

The swell factor of materials can be generally disregarded if the rated capacity of the dipper is used. The heap of the material in the dipper should take care of the swell.

Consider the same haul example as before, but with the scraper exchanged for a 15-cu yd bottom-dump wagon loading under a 3-cu yd shovel. Assume the shovel loading rate, established by other means, or "guesstimated," at 300 cu yd per hr. Then the figures are as follows:

Load time (12 pay yd)	2.4 min
Dump time	0.2
Turns, acceleration, gear shift and spot under shovel (unchanged)	1.0
Total fixed time	3.60 min
Total haul and return time (unchanged)	4.38 min
Total cycle time	7.98 min
Trips per 50-min-hr (83% efficiency)	6.25
Pay yd per trip	12
Pay yd per hr per wagon	75

Belt loaders of current size can be expected to deliver approximately 15 to 16 cu yd of material to the hauling unit in an average of 35 to 40 sec when operating at top

efficiency during productive time. Production will vary some, depending on the power available and the ease of loading of the material. With allowances made for exchanging and turning time, this figure may reduce to approximately 12 cu yd per min. However, the actual loading rate should be used for the load time, and maneuvering in the cut included under job efficiency.

Costs

Yardage or tonnage costs of hauling units are computed in the same manner as for scrapers. The cost of the excavator is not to be included or pro-rated over the haul fleet. Costs for hauling units are often figured on the ton-mile basis.

Ton-mile cost = Cost per ton ÷ one-way haul distance in mi.

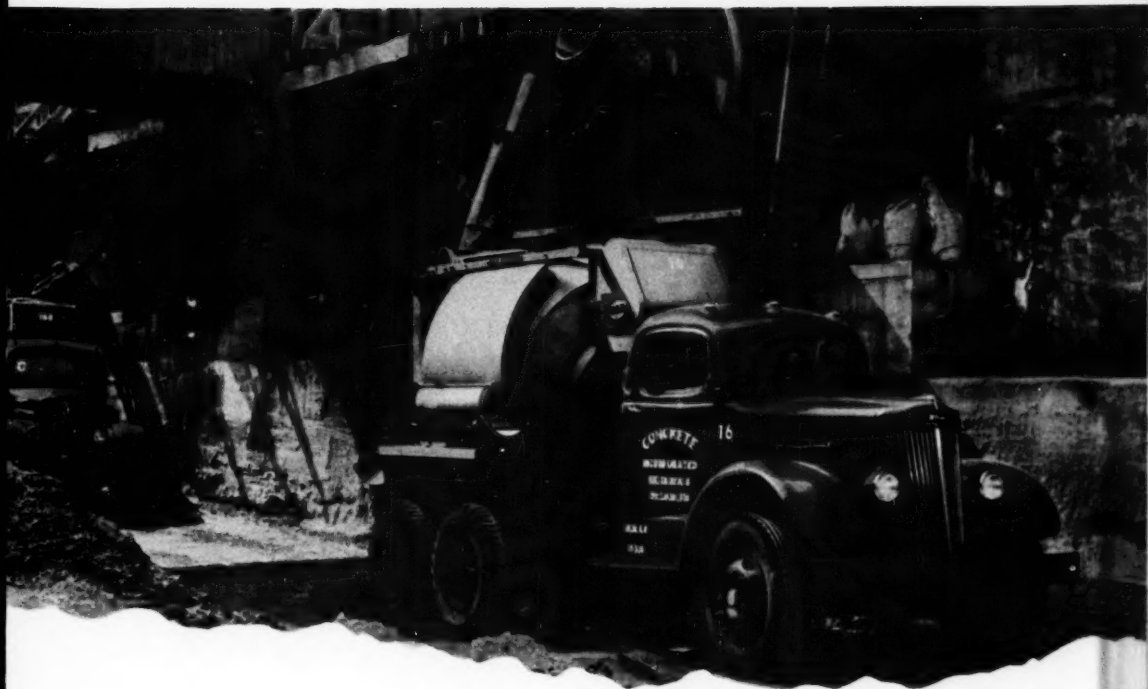
Bulldozer Production

The bulk of bulldozer applications are a miscellany of moves defying anything approaching accurate estimating. Some few, such as working a high wall, backfilling, stockpiling, or feeding traps and grizzlies can be analyzed. The dozer cycle on such work includes two reversals of direction, a loaded haul, and a backing operation. Older units without a quick-shift transmission or fast reverse must be figured separately.

An approximate cycle for both types would be:

	Slow shift unit	Fast shift unit
Two stops—two shifts	.30 min	.10 min
Load blade and doze 100 ft	.50	.50
Back 100 ft	.35	.20
Total cycle time	1.15 min	.80 min
Trips per 50-min-hr (83% efficiency)	43	62
Pay yd per trip (assumed)	2	2
Pay yd per hr	86	124

(Continued on page 67)



MORE WORK FOR THE WHITES **on the Extra-Rugged Jobs**

HIGH-MILEAGE DEPENDABILITY . . . at lowest cost per mile . . . makes White Super Power your best investment in motor trucks. Maintenance costs less because of quality features in material and design found in no other trucks. On the operating records of thousands of truck owners everywhere . . . in all lines of business . . . large and small . . . White Trucks, engineered to the exact requirements of each job, always *earn more, cost less.*

For facts about the advantages of an investment in White Super Power for your business, see your White Representative.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

BUILDERS of the complete line of White Super Power and Diesel Power tractors and trucks and the White 3000 with power-lift cab . . . three great lines for city and suburban delivery . . . highway transport . . . construction and off-the-road service.



**HAVE YOU ENROLLED IN THE
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FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

Only Carlon...

The first real pipe that is plastic

ONLY CARLON combines the inherent advantages of plastic with the desirable characteristics of metallic pipe. This new pipe is guaranteed against rot, rust, and electrolytic corrosion and is impervious to sulphurous waters, alkalies, metallic salts, and corrosive wastes. As a result, CARLON has a projected trouble-free service life many times longer than ordinary pipe. Because of its light weight (1/9th that of steel), CARLON can be installed rapidly without special tools or heavy materials handling equipment.

CARLON PIPE can be used for drinking water, sludge, drainage and irrigation systems, ventilating and cooling lines, hydraulic sluicing, and intake and exhaust piping. It is

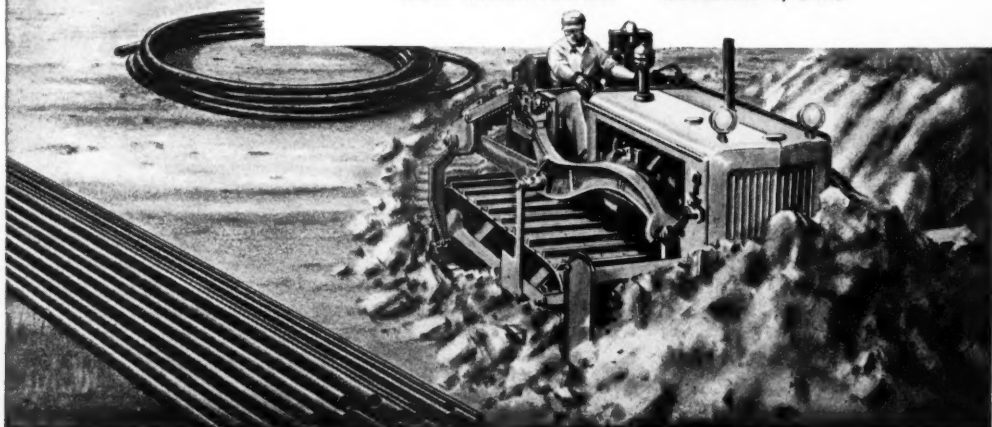
recommended also for low pressure air lines and exposed or concrete-encased electrical conduit.

FLEXIBLE and RIGID types of CARLON are available in all standard pipe sizes. Flexible CARLON plastic pipe is furnished in long lengths (requiring fewer fittings) and will conform to irregular surface contour, ditch line, or structural plan. Rigid CARLON is supplied in 21-foot coupled sections which can be joined rapidly by means of molded threaded fittings. In addition, this pipe can be threaded with conventional pipe dies. Complete line of fittings incorporating standard I.P.T., is available for plastic-to-plastic as well as plastic-to-metal connections. When you pipe for the future, specify ONLY CARLON plastic pipe!



CARLON PRODUCTS CORPORATION

IN CANADA: MICRO PLASTICS, LTD., ACTON, ONTARIO
10154 MEECH AVENUE • CLEVELAND 5, OHIO



(Continued from page 64)

There is no standard method for arriving at blade capacity. However, the volume enclosed by a 1:1 slope from the top of the blade to the ground in front, and a vertical plane at each end, approximates it.

Other Computation Methods

The other three methods of estimating production are less accurate than the foregoing direct method of computation.

The tabular method is simply the use of tabular information taken for a given piece of equipment from previous jobs of similar nature, or production charts found in manufacturers' literature. Unfortunately, however, every project contains variables affecting production which seldom duplicate the conditions from previous jobs, or those assumed for specification sheet figures.

Another method involves the use of manufacturers' earthmoving calculators. These are nothing more than specialized slide rules incorporating the principles used in direct computation. They will simplify some of the paper work, but their value can be overestimated. There are two schools of thought: One says such gadgets are worthless; the other attributes magical powers to them. Actually, if used with specific job data, they will give results no more accurate than the factors supplied.

Simple jobs or small portions of the more complex ones can also be roughed out by a short cut on direct computation. The short-cut system is basically a mental process of eliminating some of the variables. Although earthwork is an approximation (and in many cases the eliminated variables cancel one another) a great deal depends upon individual judgment. As a result, such an approach is extremely hazardous for bid work.

Using the original example for instance, a fast "guesstimate" would say:

Fixed time	2.5 min
Judge that grades would result in average speed of 1,400 ft per min for total round-trip of 6,800 ft, making trip time	5.0 min
or total cycle is into a 50-min hr for about	7.5 min
times 12 cu yd per trip, for production of	7 trips
	84 cu yd per hr

After working with a particular

1 of 10 Reasons Why UNIT is a Better Machine



The UNIT 1020 — $\frac{3}{4}$ Yard Shovel furnishes economical and dependable service on every digging operation. Constructed to operate as a complete unit, its fewer working parts reduce replacement, operating, and maintenance costs.

Drop-forged parts are used throughout in the construction of UNIT equipment. Forgings are remarkably free of concealed defects and have fatigue-resistant qualities which assure uniform toughness in these parts. The front legs of the "A" frame and the end connections are one-piece drop-forgings, built to withstand the great strains imposed in digging or lifting operations. Forging also imparts a flawless grain structure to steel, thus giving it greater strength to accommodate enormous compressive stresses. For this reason, ALL spur and bevel gears, boom-hoist worm, power take-off drive worm, turntable hook-rollers, crawler-rollers, and many other equally important parts, are drop-forgings on UNIT Cranes and Excavators.

7th of a series of 10 ads describing outstanding UNIT features.

UNIT CRANE & SHOVEL CORP., 6305 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — $\frac{1}{2}$ and $\frac{3}{4}$ Yd. Excavators. Cranes up to 20 tons capacity.



SHOVELS • DREDGES • CLAMNETS • CRANES • TRENCHERS • MAINTENANCE

Stang

For
KNOW HOW
ENGINEERING
SUPERVISION
EQUIPMENT
to keep jobs
DRY

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The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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BUILDS BETTER FORMS

to last longer



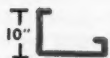
to save time



for real economy



THIS SIDE FOR 15-INCH SLAB



THIS SIDE OF SAME FORM FOR 10-INCH SLAB

- No need for two sets of forms when the Helco dual duty form will do the job. Dual duty forms have double treads permitting the use of spreader and finishing machines in either position. 1/4" steel plate, welded construction. Special sizes to specifications.

STANDARD FORMS FOR GENERAL USE

- Heavy rolled steel, all welded construction. Wide tread with five rigid supports per each 10-foot section. 50% more strength with Heltzel upturned base flange. Exclusive Heltzel sure-grip stake pockets. 1" diameter stakes of re-rolled rail material with hot forged points.

WRITE FOR HELTZEL BULLETIN K-19

HELTZEL

STEEL FORM & IRON CO.
WARREN, OHIO

unit for extended periods, the judgment factor can make such an approach surprisingly correct. Many a contractor owes his success to just such an uncanny ability, with perhaps no conscious mental arithmetic before the final figure.

Generally speaking, however, it has only two values:

1. It gives a rough, on-the-spot picture.
2. It is fast.

Beyond that, for most, it is an invitation to bankruptcy.

Equipment Manual

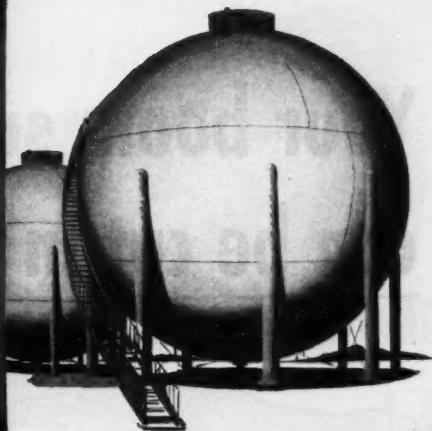
A LONG-NEEDED TEXTBOOK on automotive and construction equipment has just been published. And while it falls somewhat short in its form of presentation and grouping of material, it is still a good basic manual on economical use and maintenance of equipment. It is a worth-while contribution to the literature of the construction industry, and should find wide application.

The information is presented in typical textbook fashion. Each chapter begins with a listing of the material to be covered, followed by a general discussion of the equipment, including data on the sizes and styles in which it is made and specialized information on the use of the equipment for a particular job. The book has many hand drawings to illustrate terms used in the text, and to emphasize the exact motions described. The data is complete, and, where possible, typical cost figures are listed. Throughout the book, the author emphasizes the importance of using the proper type and size of equipment for the work at hand.

Information in the appendix covers lubrication, depreciation, weights and measures of various construction materials, and typical specifications and conditions for crawler and truck cranes.

"Automotive and Construction Equipment" has been prepared by C. W. Lindgren. Mr. Lindgren has a rich background of practical experience from which to draw in writing this book. At present, he is on duty as a Lieutenant Commander with the Navy Bureau of Yards and Docks.

The book contains 287 pp and 120 illustrations. Priced at \$4.50, copies may be obtained by writing the author, Box 3620, Washington 7, D. C.



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in petroleum***

ACTIVITY NO. 1 at Cities Service is to keep right up to *today*.

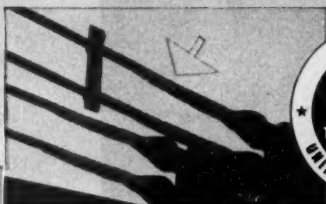
One of the most recent steps of Cities Service progress reaches skyhigh over East Chicago today. The Cities Service refinery there is now topped by a huge new unit of the latest type for catalytic refining. Improvements extend to the refinery's new gasolene treating equipment, gas purification unit, and gas recovery system. Many other modern structures, including the new "spheres" for storage of highly volatile hydrocarbons, all enter into that new look today at East Chicago.

There as elsewhere, progress by Cities Service results in products of excellence, and service to match. Consequently, users of petroleum products for industry, commercial transport, farming, and motoring can be sure of receiving top quality when ordering from Cities Service.

CITIES  SERVICE

QUALITY PETROLEUM PRODUCTS

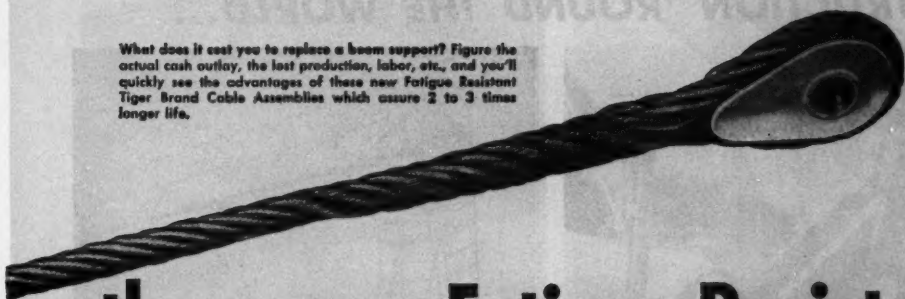
Your boom support costs can be cut in half with



Vibration is effectively dampened here. Note how the interwoven end dampens vibration over a long section of rope instead of concentrating it at one point.



What does it cost you to replace a boom support? Figure the actual cash outlay, the lost production, labor, etc., and you'll quickly see the advantages of these new Fatigue Resistant Tiger Brand Cable Assemblies which assure 2 to 3 times longer life.



these new Fatigue Resistant TIGER BRAND Cable Assemblies

An exclusive development of AMERICAN STEEL & WIRE COMPANY

Why these boom supports last 2 to 3 times longer. Excessive vibration is the chief cause of boom support failure. In old style boom supports, vibration is concentrated at the point where the rope enters the socket. This causes the wires to break from fatigue. In this new assembly, the effects of vibration are dissipated over a long section instead of being concentrated at one point. The result is two to three times longer life for boom supports and much greater safety.

The new Tiger Brand Assembly has a novel design which embodies *interwoven* eye-end and open-end thimbles which makes these pendants easily and quickly interchangeable on standard equipment.

You also save replacement time. If the machine is down for two or three hours

while new boom supports are being installed, you lose that much production time. Longer life from our new supports results in fewer replacements. This means clear profit if you use the new Tiger Brand Supports.

Order your next boom supports now. The new Fatigue Resistant Boom Supports can be easily and quickly adapted to your present equipment because essential dimensions such as pin diameters, distances between ears, etc. are the same as for standard open and closed sockets. Send the coupon for complete information.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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Please send me complete information on your
new Tiger Brand Boom Support Assemblies.

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City..... State.....

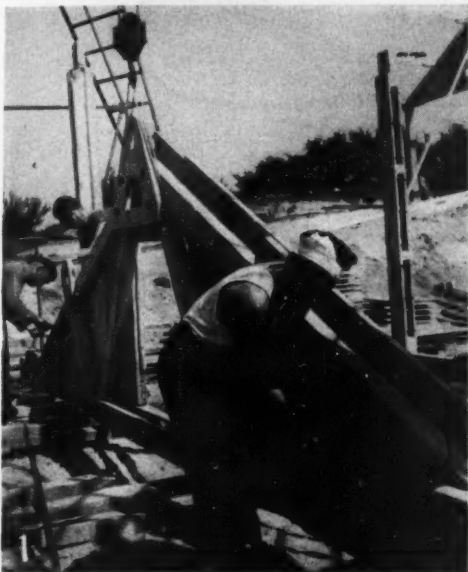


AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

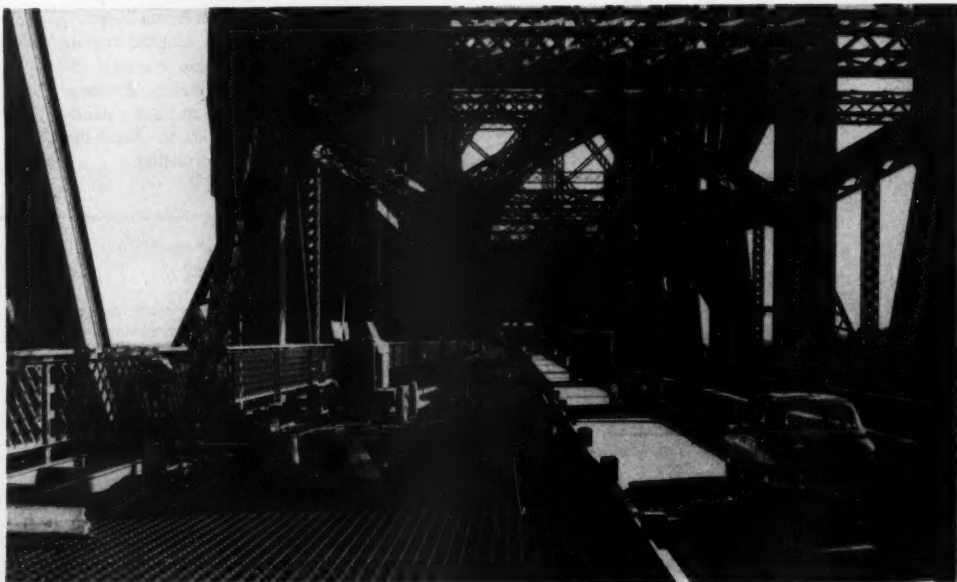
CONSTRUCTION 'ROUND THE WORLD...



FRANCE—Precast concrete framing components are erected for housing project at Sarre et Moselle coal mines, Lorraine, where more than 1,600 dwellings are being built. Members of all-concrete structures are lightly reinforced beams and slabs, precast in plant off



site. On job, they are assembled and lifted to place by trolley hoist on pipe-frame gantry that rides rails on either side of house. All pieces are joined by steel bolts. In Fig. 1, gable end is bolted up before placing; in Fig. 2, gantry lifts column; while Fig. 3 shows

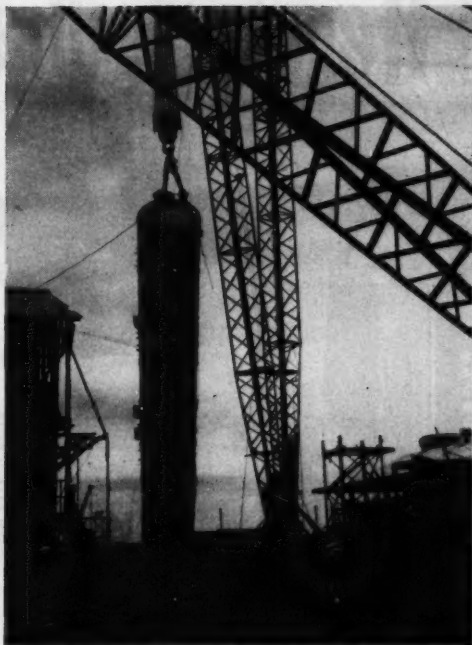


CANADA—Famous Quebec Bridge over St. Lawrence River, completed in 1917, and still the world's largest cantilever span, gets roadway width doubled to 30 ft. New I-Beam Loc flooring is being welded over area formerly used for rail traffic, and, when this section

is finished, autos will be diverted over it while other half is similarly decked. Dominion Bridge Co. is contractor for this and for new 780-ft approach structure, which includes 480-ft arch span over adjacent Chaudiere River.



details of roof trusses. Outer walls of houses are standardized concrete slabs that fit between columns and are held in place by metal pins and wedges. Window and door assemblies are fastened between joists, and insulation is glass wool.—McGraw-Hill World News



ENGLAND—Largest fractionating tower ever built in Britain for domestic use is raised by guy derrick at Shell's new Stanlow refinery after 250-mi trip on two 16-wheel bogeys drawn by two 20-ton truck-tractors. It is 11x84 ft, weighs 115 tons.

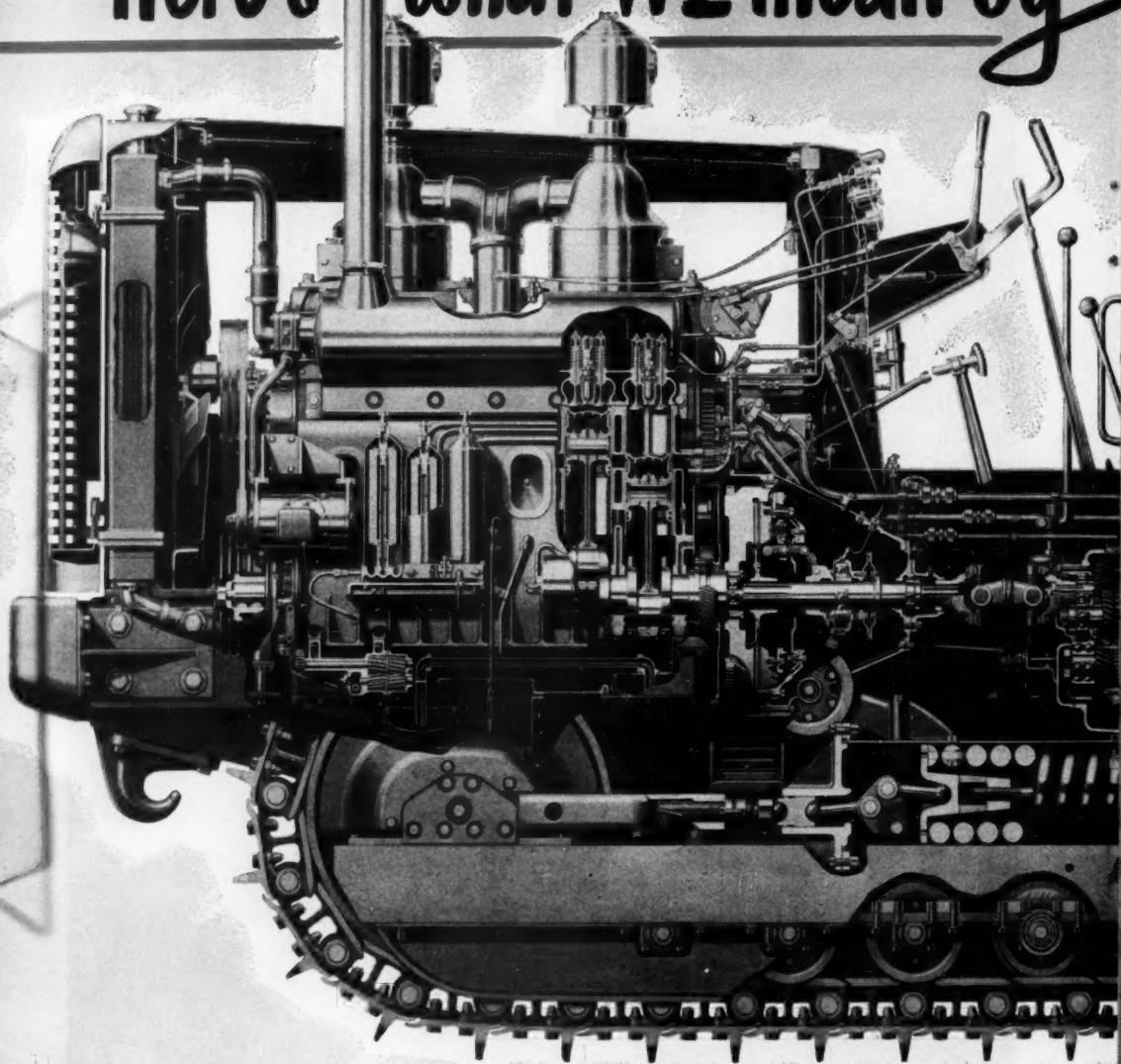



BELGIUM—It took just one month for Kellogg International Corp. to raise these frames, towers and heat exchangers at Antwerp refinery of Societe Industrielle Belge des Petroles. Completion of 30,000-bbl-per-day plant is forecast for this fall.





SOUTH AFRICA—Montagu Divisional Council, Cape Province, produces highway stone in roadside plant where Caterpillar D4 dozer feeds Kennedy crusher. Note feed chute: It's made from worn-out cutting edges from scrapers, dozers and graders.


Here's what WE mean by




HD-3
40.26 drawbar hp.
11,250 lb.


HD-5
70 drawbar hp.
18,800 lb.

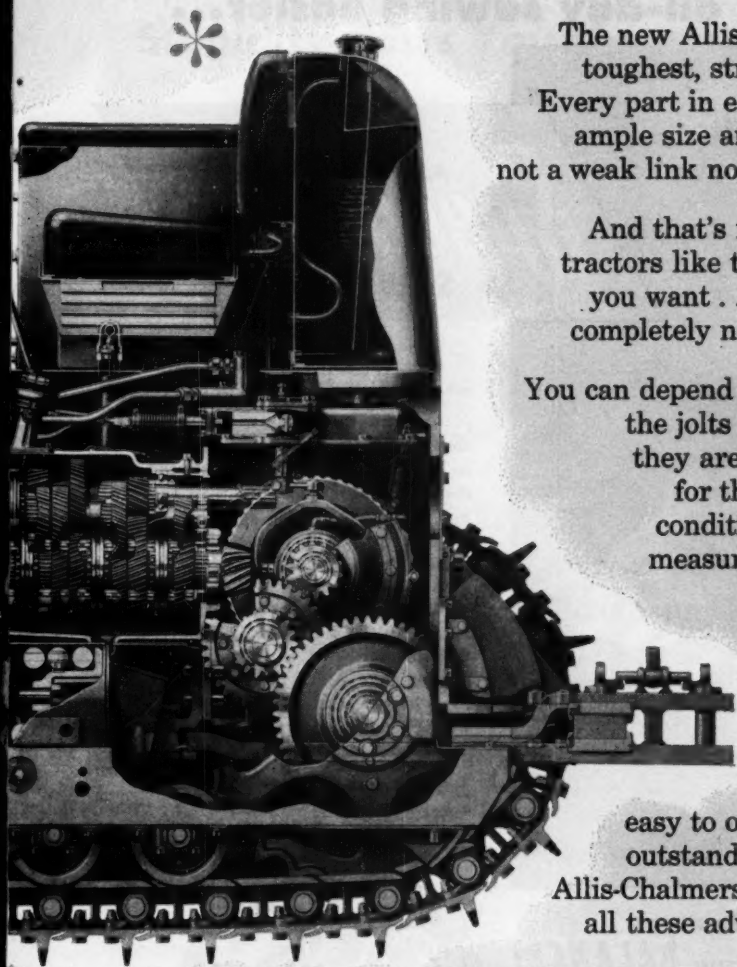

HD-15
102 drawbar hp.
27,850 lb.


HD-30
Hydraulic Torque Converter Drive
175 net engine hp.
41,000 lb.

The Newest, Finest Tractor Line on Earth!

• DESIGNED FOR YOUR JOB • BUILT TO TAKE IT • EASY TO OPERATE • EASY TO SERVICE

BUILT TO TAKE IT



The new Allis-Chalmers tractors are the toughest, strongest tractors ever built. Every part in each of the four models has ample size and strength to do its job — not a weak link nor a compromise anywhere.

And that's no accident! To bring you tractors like these . . . with the qualities you want . . . Allis-Chalmers built 'em completely new — from the ground up.

You can depend on them to take the loads, the jolts of today's jobs . . . because they are modern tractors designed for the most grueling operating conditions. They will more than measure up to your expectations!

Here are just a few of the many reasons why this
**NEWEST, FINEST
TRACTOR LINE ON
EARTH is Built To
Take It . . .**

besides being easy to operate, easy to service and outstanding in performance. Your Allis-Chalmers dealer will gladly explain all these advantages . . . see him NOW.

- All-Steel Welded Construction
- More Power with Bigger Engines — Longer Engine Life
- More Weight, Greater Strength
- Long-Lasting, Large Diameter Clutches

- Extra Heavy Main Frames — No Extra Reinforcement Needed for Front-Mounted Equipment
- Double Reduction, Straddle-Mounted Final Drive Gears with Live Sprocket Shafts and Caged Bearings
- Positive Operating Track Release —

- Works in Oil on HD-9, HD-15, HD-20
- All New, Specially Designed Track Assembly
- Positive-Seal Truck Wheels, Support Rollers and Idlers — Mounted on Tapered Roller Bearings. 1,000-Hour Lubrication!

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Balance

makes all-day sawing easier...



Speedmatic
SAWS

"I grab for the Speedmatic when all-day sawing is ahead of me"...

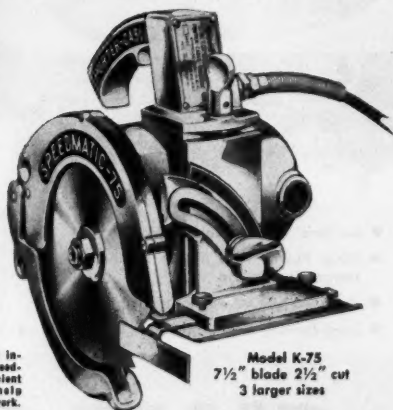
... that's the way the man on the job shows his preference for the saw that is *built for easier handling*. Speedmatic is center-poised, to cut straight and true. No "power jump" when starting to cut. It practically feeds itself—no cramping, no veering. Follows the line with only the slightest guiding. Ends the cut with the saw resting on the main piece. On bevels, Speedmatic holds as steady as on straight cuts. And when the work is in an awkward or hazardous location, the Speedmatic operator always has one hand free for safe support.

All these Speedmatic Features Add Up to True *BALANCE!*

When you use a Speedmatic, you discover why "It's Balanced When You Lift It; It's Balanced While You Run It." You'll like the center-mounted handle; the extra broad base; the blade on the right; the straight-line, helical gear drive; the compact motor and counter-balanced moving parts... features that make the big difference between ordinary power sawing and Speedmatic sawing. Ask for a Speedmatic demonstration at your dealer's, or on the job. It's an eye opener.

FREE

Write us for full information about Speedmatic Saws and efficient accessories that help speed construction work.



Model K-75
7½" blade 2½" cut
3 larger sizes

PORTER-CABLE MACHINE CO.

7026 N. SALINA ST., SYRACUSE, N. Y.

In Canada: Write Strongridge, Ltd., St. Catharines, Ont.

MANUFACTURERS OF SPEEDMATIC AND GUILD ELECTRIC TOOLS—THE BALANCED LINE

THE *Maintenance Shop...*

A MONTHLY EQUIPMENT SERVICE AND REPAIR FEATURE

Stupidity Costs You Money

BY HOMER C. CAMPBELL, Service Manager
H. W. Moore Equipment Co., Denver, Colo.

IN CONSTRUCTION, we see many examples of poor preventive maintenance every day. Some of these instances are just the normal flow of minor items such as excessively dirty air cleaners, clogged fuel and oil filters, sediment traps full of water, and loose nuts and bolts. Periodically, however, we find an apparently exaggerated case such as that shown at the right.

This is a roll assembly from a 24x16 roll crusher. Note the severe grooving of the shaft. It's due to a complete failure of the bearing, plus the asinine running of the equipment after the bearing failure certainly should have been all too obvious. Very definite and excellent instructions as to the lubrication, servicing and preventive maintenance on the crusher were given, yet were ignored completely. Sheer stupidity!

Many things contribute to failures such as this. The most frequent, of course, is the human element. A mechanical feature that assists in this is improper tension spring adjustment on the roll assembly, permitting the rolls to chatter. This in itself will not cause bearing failures but is a contributing factor to this extent: It shows that the operator is asleep on the job. And if he permits this condition to continue, in all probability he is also permitting faulty lubrication of the equipment. Loose nuts and bolts are a factor leading to the same condition. The factory recommends certain definite seasonal changes for the lubricant in the crusher. However, that is not so all-inclusive as to permit the operator to assume that the bearings need no attention except as seasonally recommended. At least the machine is entitled to a weekly checkup. The manufacturer asks as much; he states that the bearings should be inspected for lubricant once a week.

You want to know just what



THE AUTHOR points to the crusher roll ruined by stupidity. For another picture of Mr. Campbell, see METHODS MEMO on page 166.

caused such a failure so that it will not happen to your equipment. The answer in this particular case is stupidity—somebody just didn't give a damn. And, frankly, that is the only answer. Definitely it was not caused by a manufacturing error or by poor material, for the equipment had done a couple of season's work before failing. Possibly someone drained the bearings and flushed them as recommended, then went over to Kelly's pool hall and forgot to replace the drained oil with clean new lubricant of the recommended type. Or possibly someone in the purchasing department decided to be economical and save a few cents on the cost of grease. Do you suppose the superintendent was production hungry and said, "To hell with it; we'll work it over when we're through here"? If he did, he didn't get through.

What about the cost of the failure? The repair parts and labor involved amounted to \$1,200 or so. The down-time was more than excessive. Partly for the reason that the bearings were hard to locate (and will be harder), the loss in production was over 7,500 tons.

What would it have cost the operator to spend 2 hrs. a week going

over this machine and practicing a little preventive maintenance in addition to the regular daily greasing and inspection? The total preventive maintenance costs during the entire life of the machine would probably have been less than the cost of this one rebuilding job and lost production.

This is not an isolated case, by any means. If it happens here, it is also happening elsewhere. And the grand total of lost time and useless waste of manpower and vital parts is too great to comprehend. Manpower and parts are too valuable to be used carelessly. Therefore, it is essential that a good, sensible program of preventive maintenance be carried out so as to conserve these essential items, even if it means foregoing a little of your profit. Your profits just cannot buy men and materials that are not available. Think it over!

(Incidentally, material used in manufacture of roll shells and crusher jaws is critical. So don't bury these used parts in the dump, but see that they are disposed of for scrap. That way they can get back to the mill where this scrap is needed.)

While we have cited but one incident here, the same is true in all other major lines of construction equipment. And the picture can be drawn many times on items that are just as costly from a dollars and cents standpoint. It also seems that these failures are always on critical items so far as replacement is concerned. Preventive maintenance will materially assist in conserving these vitally needed parts. And, best of all, a thorough maintenance program will add profit to the job.

Servicing Small Electric Plants

MAINTENANCE on small construction equipment items such as electric plants is too often neglected. Yet, like larger machines, these must be serviced regularly also, if engine and generator life is to be

THOROSEAL

Restored this

Filtration Plant



BEFORE

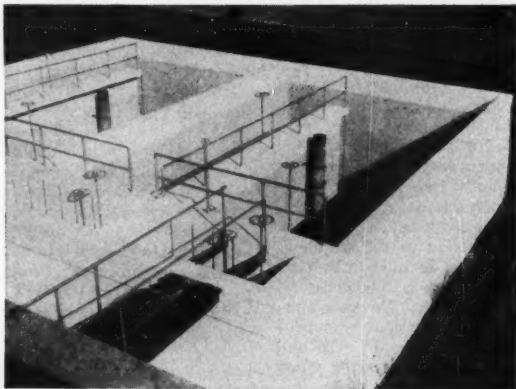
Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.



It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

AFTER

At minimum cost, almost 1/3 the cost of other methods, concrete restoration, patching and surface protection was completed with THORO System products on Filtration Plant in Keyser, West Virginia. Contractor: Standard Construction & Waterproofing Company, of Cumberland, Maryland.



WATERPLUG
To Stop Leaks

THOROSEAL
To Seal Surface

QUICKSEAL
For Beautiful Finish

Our 20-page Brochure describes, in detail, how The THORO System products can benefit you in your construction plan. Send for brochure today, which shows methods of application and how to use the material.



Standard Dry Wall Products
Box X, NEW EAGLE, PENNA.

increased and satisfactory performance obtained from the unit.

The following simple preventive maintenance program for small electric plants is recommended by D. W. Onan & Son, Inc., manufacturers of such units. Broken down into daily, weekly and monthly servicing, the schedule covers both engine and generator. It is applicable to any equipment of this type.

Daily Service

Fuel—Everybody knows it, but some people forget, that small engines of this type require clean gasoline of 68 to 74 octane. The smaller the quantity of lead in the gas, the better.

Oil—Small engines have less power reserve to overcome friction caused by heavy, viscous lubricants. For this reason, use a premium grade lubricant of the correct viscosity, according to the manufacturer's specifications. Check the oil level about every 8 hr of operation—more often under severe dust conditions.

Air Cleaner—Don't forget to check the air cleaner. Most of them must have oil in the cup, of a grade similar to that in the engine. New engines have been completely worn out in 50 hr in a dust test room when operated without oil in the oil bath air cleaner.

Weekly Service

Oil—Give your small engine a break. Change the oil every 100 operating hr or less, depending on dust. This is equivalent to about 4,200 mi on your automotive truck engine.

Air Cleaner—We come to the air cleaner oil cup again. Remove, wash and fill with oil. It will pay for the little spent.

Battery—If the engine is started by battery, check the water level. Add clean distilled water to each battery cell.

Spark Plugs—When using a highly leaded fuel, it may be necessary to remove the spark plugs, sand blast or wire brush them and put them back in the engine.

General—Be generous with the oil can. Put a few drops of light lubricating oil on the governor and throttle linkage joints.

Monthly Service

Fuel Sediment Bowl—If your engine is equipped with a fuel filter (Continued on page 80)

DEADLINE BEATERS

● Trackson Tractor Equipment is working night and day to help vital construction meet a defense production deadline.

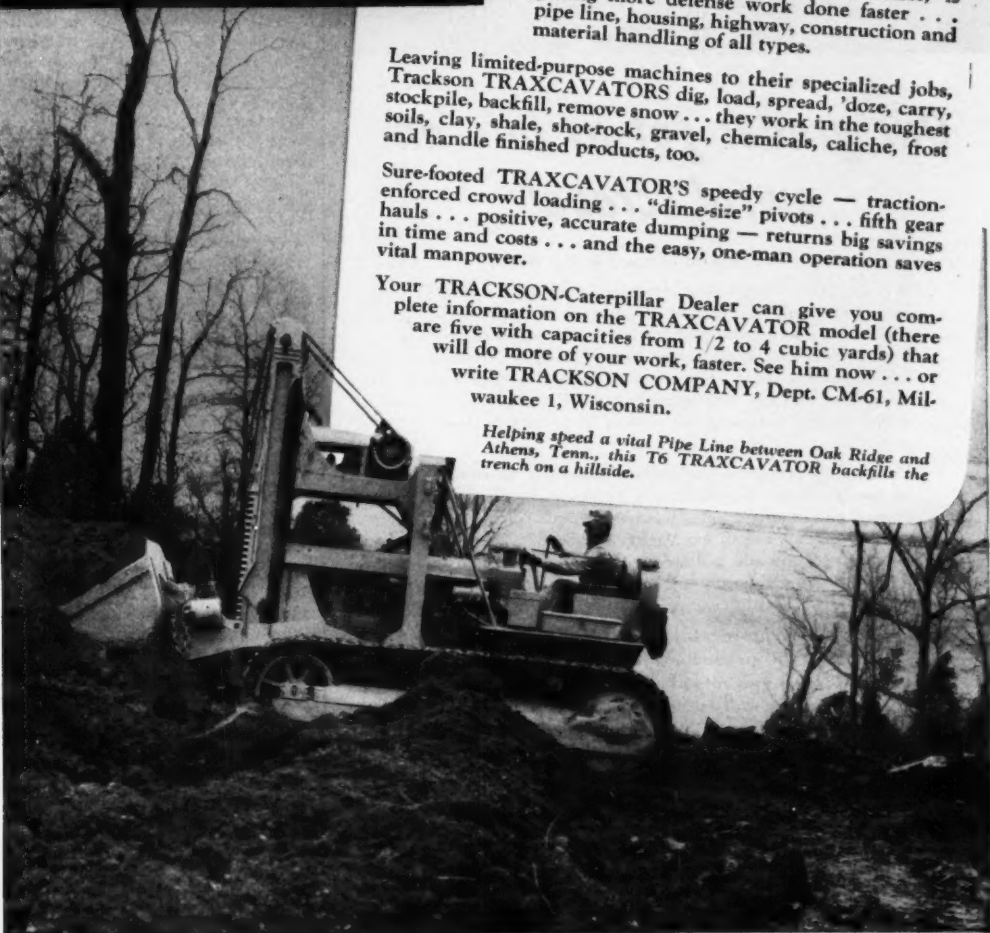
Rough schedules are met head on by Trackson products, including TRAXCAVATORS — PIPE LAYERS — EARTH AUGERS — SWING CRANES — all designed and built to withstand years of long, hard usage. This equipment, matched with the power and capacity of Caterpillar Diesel Tractors, is getting more defense work done faster . . . pipe line, housing, highway, construction and material handling of all types.

Leaving limited-purpose machines to their specialized jobs, Trackson TRAXCAVATORS dig, load, spread, 'doze, carry, stockpile, backfill, remove snow . . . they work in the toughest soils, clay, shale, shot-rock, gravel, chemicals, caliche, frost and handle finished products, too.

Sure-footed TRAXCAVATOR'S speedy cycle — traction-enforced crowd loading . . . "dime-size" pivots . . . fifth gear hauls . . . positive, accurate dumping — returns big savings in time and costs . . . and the easy, one-man operation saves vital manpower.

Your TRACKSON-Caterpillar Dealer can give you complete information on the TRAXCAVATOR model (there are five with capacities from 1/2 to 4 cubic yards) that will do more of your work, faster. See him now . . . or write TRACKSON COMPANY, Dept. CM-61, Milwaukee 1, Wisconsin.

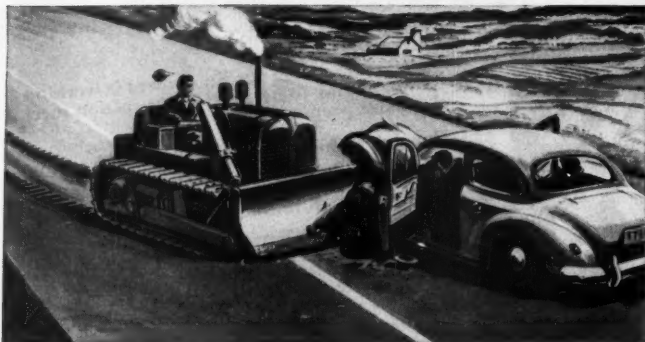
Helping speed a vital Pipe Line between Oak Ridge and Athens, Tenn., this T6 TRAXCAVATOR backfills the trench on a hillside.



TRACKSON

TRACTOR EQUIPMENT





Our grader got us into an awful scrape!

(Based on Hartford Claim #46 KL 70193)

We were on a bridge-construction job when it happened. Our bulldozer-grader was moving along the highway when a hydraulic piston head in the steering gear broke. Swerving crazily, the heavy machine crashed into a passing sedan. The car was badly damaged and the driver and his wife severely hurt. Car repairs cost over \$300 and the occupants sued us for \$35,000 for their injuries.

Fortunately we have Contractors' Liability Insurance in the Hartford. The insurance company handled the claims and made a satisfactory settlement...without trouble or expense to us. Mighty good thing, too! We wouldn't have made a dime on the job if we'd had to pay the loss ourselves.

• • •

In the contracting business, proper Liability insurance is a **MUST**. Without this protection, you can't be sure of a profit on any job...and you're wide open for a staggering loss! With its experience and facilities as one of the largest and strongest insurance carriers in the field, the Hartford is particularly well equipped to handle your needs for Liability insurance. Contact your local Hartford agent or your own insurance broker for the facts on Hartford advantages. In more than 5,000 communities the name of the Hartford agent can be secured by calling Western Union by number and asking for "Operator 25."

HARTFORD

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY
Hartford 15, Connecticut

Year in and year out you'll do well with the Hartford



(Continued from page 78)

ter bowl, remove it, clean it and replace it every 200 operating hr. It's easier to clean the fuel sediment bowl than the carburetor bowl.

Carbon Removal—With certain highly leaded fuels or when operating under light loads, the engine may lose power. By using other fuels, you might be able to operate the engine twice as long before it loses power. Anyway, carbon removal is necessary.

To remove it, take off the cylinder head and wire brush the carbon from the head, piston and around the valves. Many times, power can be restored without grinding the valves by merely wire brushing around the valve head and seat.

Inspect the valve seat carefully because it is easier to grind the valves at this time if it is necessary. Valve life may be considerably lengthened by frequent carbon removal. As soon as the engine power decreases noticeably, get busy.

Ignition Breaker Points—Inspect the ignition points for burning or pitting. Clean or replace them and adjust them to the proper setting as specified in the instruction manual.

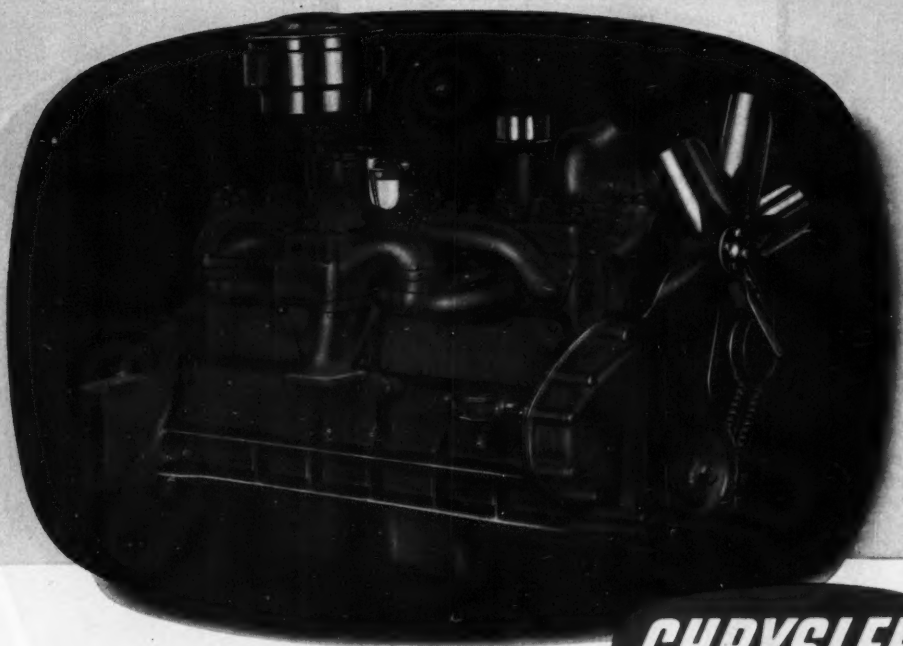
Generator—Give the generator commutator, collector rings and brushes a quick once-over. The commutator and slip rings should have a smooth, shiny, mahogany color. If the brushes are worn or chipped, or if the commutator is rough, see your instruction manual for servicing information.

General Information

For engine protection, check its speed occasionally. Engines should not be operated at speeds in excess of 3,000 rpm for any considerable length of time.

Any gasoline engine electric generator should have the voltage checked occasionally. It may be necessary to change the speed of the engine to keep the voltage of the generator within its proper limits. Generally, the voltage of an engine generator set will not remain at the nameplate voltage under varying load conditions, but will be about 10% higher than this rating when there is a full rated load on the plant. Adjustment of the governor will usually bring the voltage regulation within the above limits.

BUILT FOR INDUSTRIAL POWER NEEDS EVERYWHERE!



CHRYSLER



Day-in, day-out! . . . developing maximum horsepower with a minimum of down time and at minimum operating cost! That's the outstanding record of Chrysler Industrial Engines on the job!

For Chrysler Industrial Engines are built *solely* for industrial use! They are designed and engineered to meet the *specific working re-*

quirements of each type of equipment they power. Chrysler Industrial Engines can also be adapted to special regional operating conditions.

A letter of inquiry will bring an engineer well qualified to discuss your particular application. Address: **Industrial Engine Division, Chrysler Corporation, Detroit 31, Mich.**

CONSTRUCTION



Chrysler Engines Power:
Ditching Machines • Cranes
• Truck Mixers • Shovels
• Loaders • Yards • Road
Pavers • Concrete Mixers
• Crane Carriers • Scoop
Tractors

INDUSTRY



Chrysler Engines Power:
Air Compressors • Pumps •
Hoists • Derricks • Tractors •
Generators • Arc Welders •
Baling Machines • Winches
• Conveyors • Tackle Blocks

FARMING



Chrysler Engines Power:
Tractors • Combines • Hay
Choppers • Gang Mowers
• Spreaders • Pumps • Feed
Mills • Irrigation Equipment
• Orchard Sprayers •
Sprinklers

OTHER FIELDS



Chrysler Engines Power:
Locomotives • Fire Pumps •
Motor Coaches • Drilling
Equipment • Pulp Machines
• Snow Plows • Oil Well
Pumps and Drillers • Street
Flushers • Air Conditioning
Equipment

VELVETOUCH LASTS LONGER BECAUSE IT'S ALL-METAL

Yes, Velvetouch lasts longer because it's all-metal.

There's no asbestos to rot or tear, no binders to loosen.

The metal friction surface is fused directly with the solid steel backing for maximum strength and rigidity. And being all-metal, Velvetouch clutch plates, facings and brake linings carry away operating heat. They run cooler, protect expensive opposing plates from damaging heat checks and warpage.

For extra service, extra savings, replace with Velvetouch...original equipment with the leaders.

over 25 years of service
1924-1951

Velvetouch

THE S. K. WELLMAN CO. • 1374 E. 51st ST. • CLEVELAND 3, OHIO

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ATLANTA—119 14th Street, N.E. LOS ANGELES — 1110 S. Hope
Atlanta 5, Georgia Street, Los Angeles 15, Cal.

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Chicago 16, Illinois Street, Philadelphia 19, Pa.

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Street, Cleveland 3, Ohio Portland 9, Oregon

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Dallas 1, Texas San Francisco 7, California

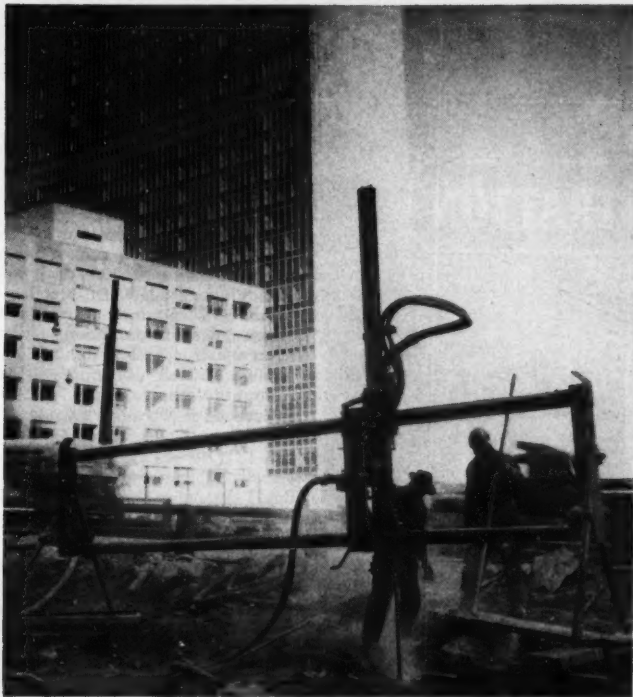
TORONTO, ONTARIO

The S. K. Wellman Co. of Canada, Ltd., 2839 Dufferin St.

EXPORT DEPARTMENT—
8 So. Michigan Ave.,
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WASHINGTON OFFICE—
1101 Vermont Ave., N. W.,
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Quarry Bar Transplanted for Underpass Drilling

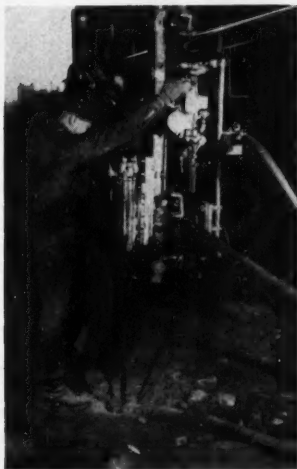


QUARRY BAR, set up in shadow of United Nations building (background), carries Joy drill rig on horizontal bars and provides straight line drilling as close as 3 in. on centers with no overbreak. Job is for underpass to carry through traffic past UN site underground. First 9-ft drill rod is . . .

QUARRY BARS, as the name implies, are usually found in quarries, insuring straight-line drilling for even breaks and minimum waste. Since that's exactly what one contractor wanted on his cut-and-cover tunnel job through rock, no reason then, why he shouldn't take one out of its natural habitat and transplant it to his job in the shadow of the United Nations project in New York City's East side. That's exactly what the L&J Concrete Corp. did when they subcontracted the job from Mount Vernon Contracting Corp. who was in turn subcontracted for excavation work to Del Balso Construction Co., all New York contractors.

In connection with the over-all UN project, the office of Borough President of Manhattan authorized construction of an underpass for through traffic under a six-block length of First Avenue. This called for relocation of utility lines, demolition of certain buildings, and a great deal of drilling through Manhattan's gneiss rock. After several experiments the L&J Concrete Corp. brought in a quarry bar, attached a Joy TM 400 drill, and immediately began turning out more than 450 lin ft per day.

The quarry bar consists of two horizontal 20-ft lengths of 5-in. OD steel pipe 4 ft 6 in. apart. These are welded to upright end posts, each of which holds two adjustable pointed legs. A drill carriage rides



. . . replaced by subsequent 12-, 18-, and 25-footers for average drill depth of 22 ft. Carbide insert bits turned out 450 lin ft per day through both gneiss formations and concreted casings previously

installed for electrical and steam lines. Note clean, even break along vertical drill holes (right) as Northwest shovel cleans up broken rock and concrete.

Preferred power on orchard sprayers and other orchard equipment — the world's most widely used single-cylinder gasoline engines on machines and tools for industry, construction, railroads, oil fields, etc., and on appliances and equipment for farm and home.

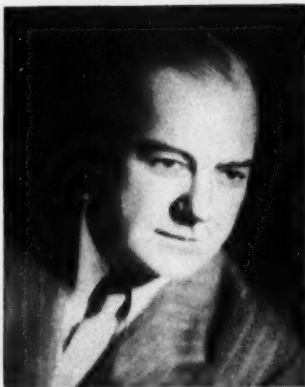
THIS TRADE-MARK is your guide to all that is best in 4-cycle, single-cylinder, air-cooled gasoline engine performance
Briggs & Stratton Corporation,
Milwaukee 1, Wis., U.S.A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

along the pipes, moved by compensating chain drives and clamped in place with set screws. This carriage contains a vertical air-operated chain drive which moves the drill up and down as needed. The contractor is drilling holes on 3- and 4-ft centers, depending on conditions, and using 2½-in. carbide insert bits. First drill rod is 9 ft long, replaced by a 12-footer, then an 18-ft, and finally a 25-ft length. Average drill depth is 22 ft.

Air is fed from a battery of Worthington compressors through a 4-in. line which runs along the edge of the tunnel line, with manifolds every 50 ft. Dust collectors and drill collars keep chips and dust down to a minimum. Drilling foreman for L&J is Johnny Rose. Ralph Buscel is super for the Mount Vernon group, and Jim Cicchetti is job superintendent for Del Balso Construction Co.

Hyland Heads Moles



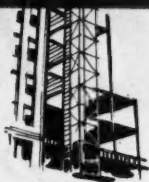
THE MOLES, association of New York heavy construction men, have elected Richard V. Hyland president. A member of the engineering firm of Madigan-Hyland, he has been consultant on many big highway and bridge projects.

PAMPER THAT EQUIPMENT...

is a slogan that should be followed, these days especially. To help you with the pampering, next month we publish our Third Annual Maintenance Issue. It's packed with machine-saving and money-saving tips.

"We'll use SKIL Drills every time."

SAYS ARTHUR WILLINGHAM

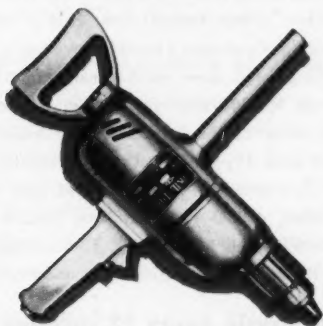


Another on-the-job report of SKIL Drill dependability! Another story to add to the country-wide record of preference built on performance—this time on a department store addition being built by Fred Howland, Inc.

To drill the holes for U-bolts in this concrete roof, Willingham uses his SKIL Drill—heavy duty $\frac{3}{4}$ " drill—more compact than any drill of comparable power and capacity. The holes are drilled quickly, easily, accurately. When the U-bolts are inserted, they form the anchors for the scaffolding.

And that's where H. C. Lewis, another Howland man, takes over with his SKIL Saw. Another SKIL tool, of course, because all SKIL equipment can be counted on to give tough, versatile, continuous performance.

SKIL tools will give you this dependable, all-around help on your construction jobs. Your nearby SKIL Distributor will give you a demonstration. Call him today.



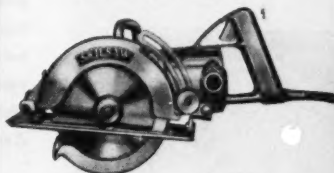
SKIL Drill Model 2103

$\frac{3}{4}$ " drill for heavy, continuous duty. Capacity: in steel $\frac{1}{4}$ " to $\frac{5}{8}$ "; in hardwood, $\frac{1}{4}$ " to $1\frac{1}{2}$ "; steel reaming, $\frac{3}{8}$ ". No-load speed: 450 r.p.m. Overall length: $16\frac{1}{4}$ " Weight: $14\frac{1}{4}$ lbs.

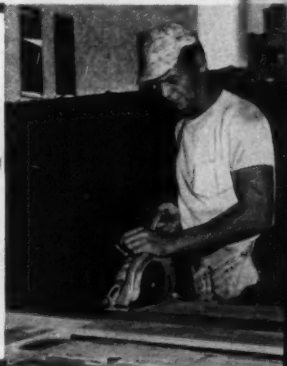


"Easily handled. Powerful." That's the way Arthur Willingham describes SKIL Drills.

"Plenty of guts for long rips," says H. C. Lewis about the SKIL Saw.



SKIL Saw Model 77— $7\frac{1}{4}$ " blade. Cutting capacity: $2\frac{3}{8}$ " maximum. Bevel cuts $2\frac{1}{2}$ " dressed lumber at 45° . Full adjustment for depth of cut. Safety telescoping guard. Overall length $17\frac{1}{4}$ ". Weight: $15\frac{1}{4}$ lbs.



SKIL Products are made only by SKILSAW, Inc., 5033 Elston Avenue, Chicago 30, Illinois • Factory branches in principal cities
In Canada: Skiltools, Ltd., 66 Portland St., Toronto, Ont.



SKIL Disc Sander



SKIL Belt Sander



SKIL Grinder



SKIL Buffer

SKIL
PORTABLE TOOLS

C TOURNAROCKER

boosts production 38%

for McGraw Construction Co.



Here's another time study from McGraw's records: During a 26½-hour period, the C Tournarocker hauled 1844 cu. yds. of slag over 2500' one-way distance. That's 69.6 pay yards per hour.

On steel mill expansion in southern Ohio, McGraw Construction Company, Inc. of Middletown had 200,000 cubic yards of slag to move from new building areas. Material was shovel-loaded into 2 conventional 15-ton dump trucks and one 16-ton, rear-dump C Tournarocker... then hauled about half a mile for use as railroad fill. Contractor's records, covering a period of 1080 working hours, show the Tournarocker delivered 4618 loads, or 59,430 cubic yards... an output 38% greater than either of the 2 trucks. Both trucks were loaded by the same 1½-yd. shovel and worked the same haul as the Tournarocker, yet one moved only 43,000 yards; the other, 41,800 yards. Of the 144,230 yards placed on the fill by all 3 haul units, Tournarocker handled 41%... the first truck, 30%... the second truck, 29%.

5000' cycle every 12 minutes

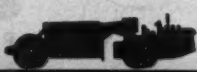
On a typical 2500-ft. one-way haul, the high-speed "C" delivered 13 pay yards of slag every 12 minutes. That's 5 loads... 65 cubic yards hourly... or about 120 tons of the 3700-lb. material per hour for McGraw Construction Company's LeTourneau rear-dump hauler.

Tournarocker, Tournashopper, Tournashauler—Trademark
Tournapull, Tournacran, Tournamixer—Trademark Reg. U.S. Pat. Off. C146

Profit Insurance—Tournarocker body is readily interchangeable behind "C" prime mover with equipment shown below.



15-yd., 18-ton
TOURNAPULL



19-yd., bottom-dump
TOURNASHOPPER



20-ton, flat-bed
TOURNASHAULER



15-ton lift
TOURNACRAN



6 or 7-yd., transit-mix
TOURNAMIXER



In dump position, back end of Rocker body is below rear wheels... bowl rests on edge of bank... loads dump clear. Drive wheels are always on firm ground.



Superintendent Frank Conner stressed high mechanical efficiency and exceptional mobility as the main reasons for Tournarocker's greater output. "The unit has been 95% efficient," he said. "Its small turning radius (13'9") was a decided advantage on the fill. No widening or turn-around expedients were necessary."

Reaches haul speeds of 35 m.p.h.

In addition, Tournarocker provided a lot of other speed advantages which both owner and operator liked. Over-size disc-type air brakes on all 4 wheels (total braking surface, 4,176 sq. in.) gave the operator complete confidence to use 35 m.p.h. haul speeds. Simple fingertip electric hoist raised body to vertical position in a few seconds...streamlined bowl cleared loads instantly.

Tournarocker advantages which helped McGraw Construction Co. increase production and cut costs on their slag-moving, offer new low costs on your hauls, too. NEW C Tournarockers have increased capacity of 18 tons, 12½% greater than the McGraw machine described here. Ask your LeTourneau Distributor about this new 18-ton... also, 9-ton and 35-ton Tournarockers.

Operator on McGraw's 1½-yard shovel has large loading target with the C Tournarocker's 12'3" x 8' top opening... speeds shovel swings, reduces spillage.



LETOURNEAU TOURNAROCKERS

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

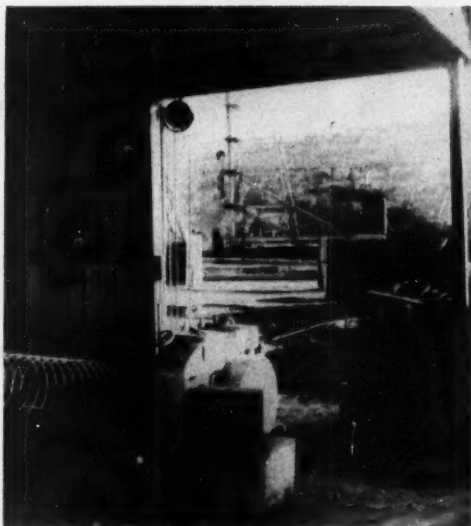
How They Cast Concrete Piles for 15-Year Job in Tasmania

McGraw-Hill World News

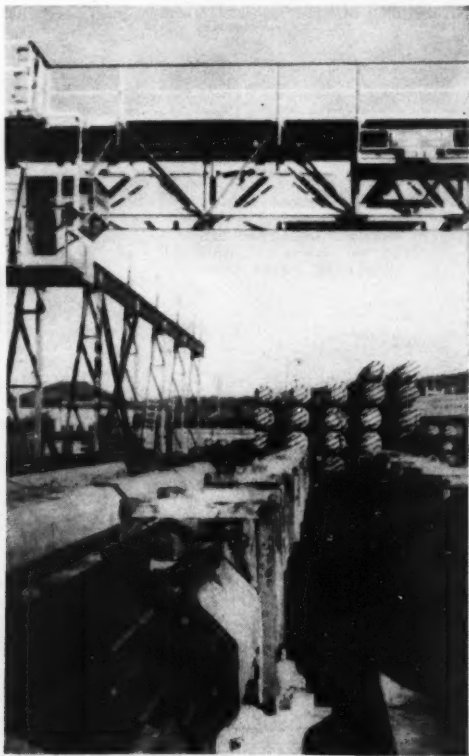
IN NORTHERN TASMANIA (Australia) the Launceston Marine Board has embarked upon a 15-yr program of wharf improvement and extension to make the city a seaport even though it lies several miles up the Tamar River from the sea. As part of the construction operations, the Board has set up an efficient concrete pile-casting yard, 60x360 ft., at the wharf site. The yard is spanned by two overhead traveling cranes operating from a concrete mixer at one end and a reinforcing fabricating shed at the other end.

The yard is designed to cast 21-in. octagonal piles in various lengths up to 80 ft. Early experience has determined an average cost of \$1.68 per ft.

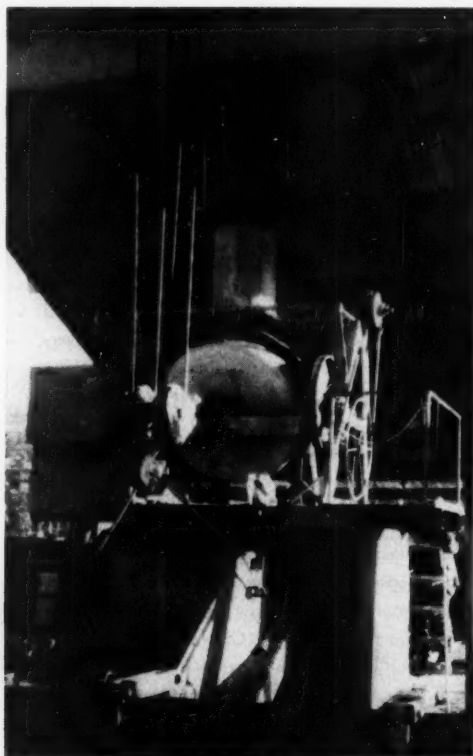
Step-by-step procedure and the equipment being used are shown in the accompanying pictures.



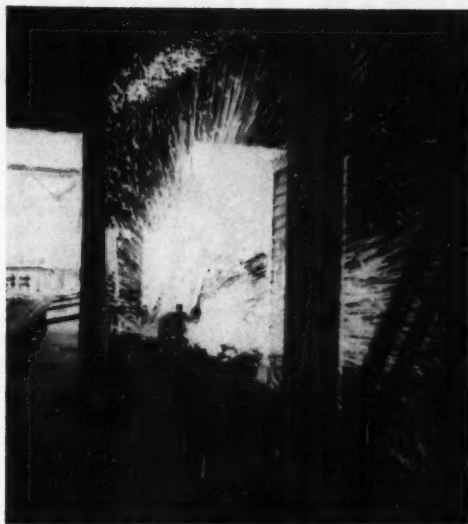
1 FIRST STEP in fabricating reinforcing cages is to make up spirals in special forming machine from reel of $\frac{3}{8}$ -in. rod.



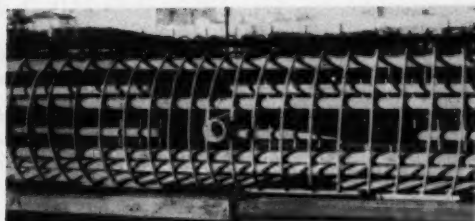
5 PILES ARE CAST in two-part steel forms on continuous steel plate base with side forms held by yokes. Plate at base and pipe spreader at top keep sides correct distance apart.



6 CONCRETE is mixed in Britstand tilting mixer, shown here in mixing position with water tank above, and then discharged into skip bucket handled by crane.



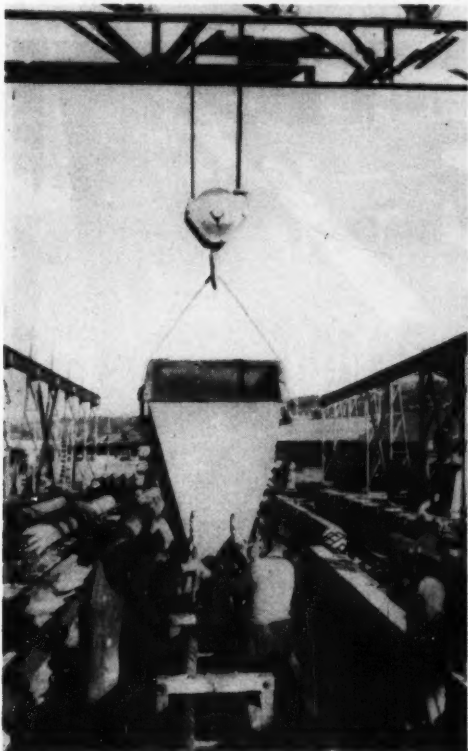
2 LONGITUDINAL RODS, 1½-in. rounds, are butt-welded to desired length in automatic 36-kva flash-bull welder.



3 EIGHT longitudinal rods placed inside of, and tack-welded to, spiral make up reinforcing cage. Steel tubing is cast into piles for lift holes.



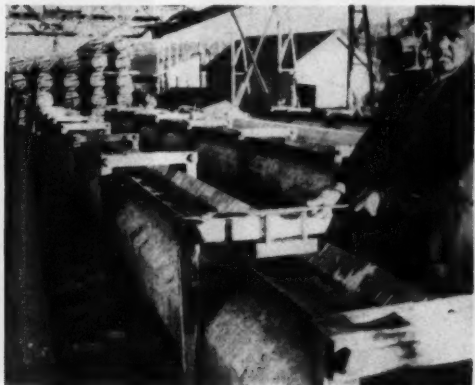
4 CAST-IRON driving points are held in jig for welding to converging longitudinal rods at end of pile.



7 OVERHEAD CRANE transports concrete skip from mixer to forms out in yard. Cranes also place prefabricated reinforcing cages, and will lift piles to storage.

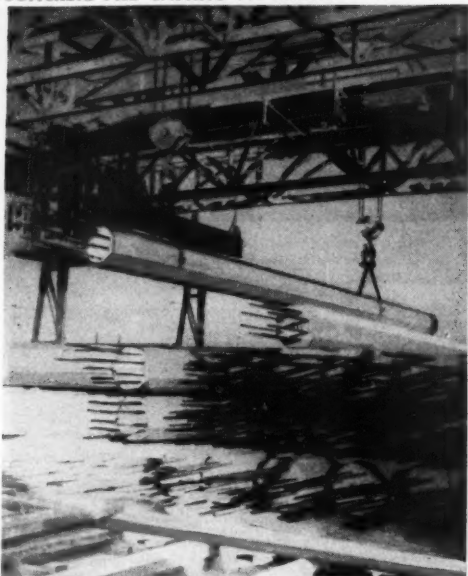


8 IMPROVED VIBRATOR is Ingersoll-Rand chipping hammer fitted with special head for vibrating outside of steel forms.

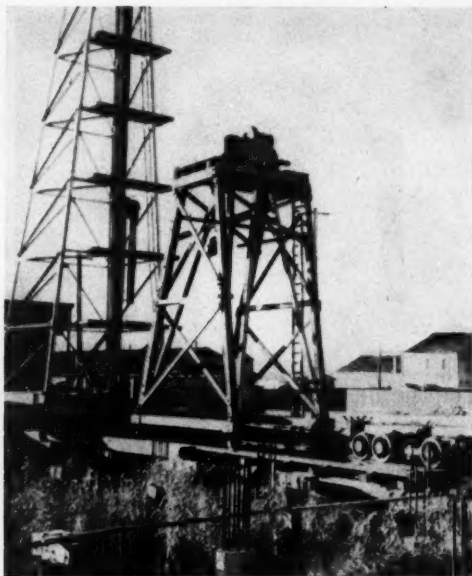


9 CORRECT HEIGHT of concrete in forms is measured by screed gage placed on top of yokes. Yokes are fixed at top, and wedged securely into place at bottom.

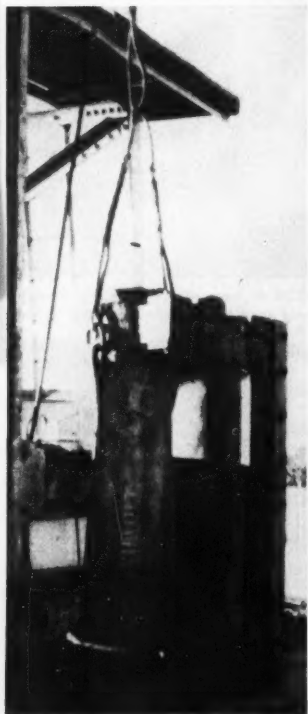
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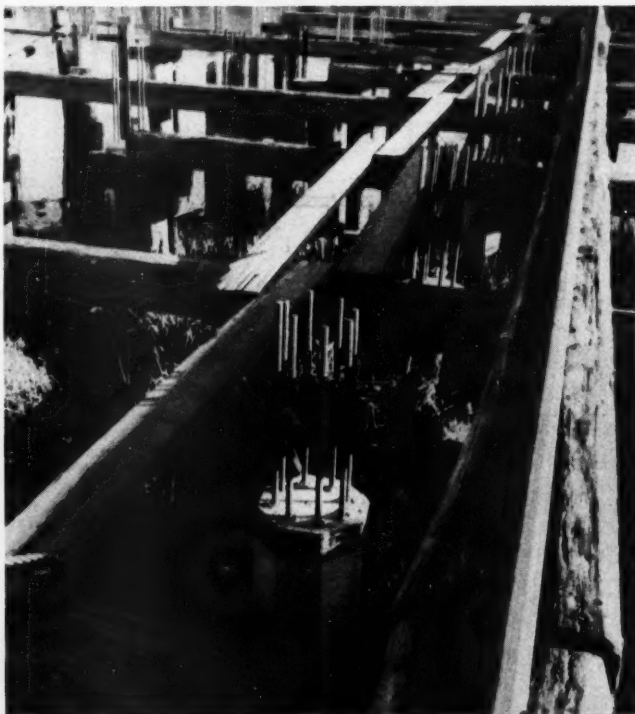
10 STRIPPED PILES are hoisted to storage by two cranes with steel-strap lift slings bolted through holes formed in piles by tubes. Thus, there's no danger of dropping them.



11 CARRIAGE (called a bogie in Australia) transports pile (not shown) from yard to hoist tower that helps driver at extreme left to up-end pile into driving position.



12 CAST-IRON FOLLOWER (left) that fits down over end of pile to let reinforcing stick through as dowels, and drop hammer (right) both ride single pile leads.



13 FOLLOWER shown in previous view fits down over extending reinforcing rods that will dowel into caps. Piles are cushioned by fiber board mats during driving.

MIXERMOBILE MANUFACTURERS

completely *Portable* CONCRETE

- WEIGH BATCHING
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CAPACITY UP TO 50 CU. YDS. PER HOUR

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This ruggedly built trio means more jobs covered...reduced labor costs...savings in time and expense of making stationary installations. All functions are performed by one operator on each unit. Completely portable equipment travels at normal highway speeds...setup time for complete operation is 15 minutes or less.



MIXERMOBILE WEIGH BATCHER • Model WB-1

Completely portable unit weigh batches aggregate on the job. Can be charged with front end loader from storage piles or directly from dump trucks. Single operator sets up unit for operation in 15 minutes. Weigh batches up to 50 cu. yds. per hour.

- Three 7 cu. yd. bins and 2 cu. yd. skip store up to 23 cu. yds. of aggregate.
- Charging skip hydraulically operated.
- Bin selector located by skip control directs skip.
- Equipped with either dial or beam scales.
- Weight, 17,800 lbs; height, 12 ft.; width, 8 ft.; overall length, 28 ft. (with skip down).
- Mounted all around on 8.25x20 tires.



2-YD. MIXERMOBILE • Model M-7

Completely mobile concrete mixing and elevating plant eliminates cost of hauling and erecting expensive equipment. One man handles the entire operation from mixer to deck.

- Improved batch-timer and counter insures positive mixing time.
- New electronic water meter gives unerring accuracy.
- Sturdy planetary drive hoist clutches give extra power, durability.
- Mixes up to 50 cu. yds. per hour.



SCOOPMOBILE • Model C. The versatile Scoopmobile with exclusive planetary drive has 7 "quick change" attachments. Standard $\frac{3}{4}$ -cu. yd. scoop bucket permits operator to keep Weigh Batchers unit performing to full capacity.

- Loads and transports aggregate.
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- Lifts and places form panels, timbers, etc., up to 4,000 lbs. capacity.

ATTACHMENTS INCLUDE: Scoop buckets in various sizes, swivel and standard type concrete hoppers in $\frac{3}{4}$ cu. yd. capacities, lift forks, crane boom, track extensions with braces up to 26 feet overall.

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63 lbs.



Model B37 —
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81 lbs. —
Sheeting
driver head
also available.



New Sump Pump Dependability
The VP4 Sump Pump is designed on a new principle of **Top-Suction** — won't bury itself in a muddy sump. Top-Suction also pulls gritty water away from the shaft seal — protects the seal, shaft and motor from wear — sharply reduces maintenance. "One-shot" lubrication oils entire pump for 24 hours of service.

Shorter from tool-top to handle, Gardner-Denver Paving Breakers are easier to hold! Your men move about the job faster and safer, too — thanks to the exclusive Gardner-Denver safety latch that works like the safety on a gun.

And here are some of the quality *extras* that make these breakers powerful "busters" on your demolition jobs:

Automatic short throw valve — virtually unaffected by wear.

Non-freezing exhaust — maintains top efficiency on cold, damp days.

Renewable chuck liner — protects both tool and breaker against loose-fitting shank.

Integral oil reservoir — insures proper lubrication to all working parts.

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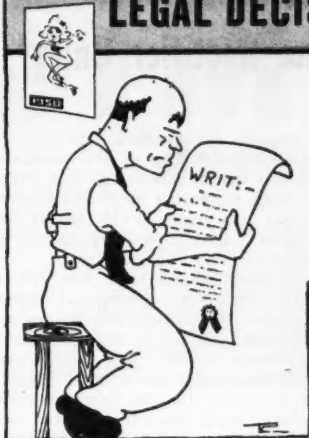
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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

LEGAL DECISIONS CONCERNING CONSTRUCTION



The New Guaranty

THE CONTRACTOR had applied to a Washington bank for a "line of credit."

"Yes, if you'll give us a proper guaranty," the bank suggested, and the guaranty was drawn and signed by guarantors satisfactory to the bank.

"This shall be a continuing guaranty and shall cover all liabilities which the contractor may incur until the guarantors shall have given the bank notice in writing to make no further advances on the security of this guaranty," the guaranty stated.

Later on a new guaranty was signed and delivered to the bank, after which the bank sued the guarantors on the first guaranty.

"You released us when you took the new guaranty," the guarantors contended.

"No — your liability under the first continued until you gave us notice in writing, no matter how many new ones we took," was the bank's argument.

The Washington Supreme Court, however, in *Bridgeport State Bank vs Union W. & M. Co.* reported in 242 Pacific Reporter, 13, found that the new guaranty was given in lieu of the old and decided that this rendered notice unnecessary.

"The bank now urges that, since the old guaranty provided by its express terms that it was to continue in force until written notice was given to make no further advances, the failure to give a written notice keeps the old guaranty in

full force and effect. But the purpose of this provision of the guaranty was merely to provide protection to the bank against oral notice not to make further advances, and could not have been intended to prevent the bank from accepting a new guaranty in place of the old one. There can be no question of the right of the bank to accept a new guaranty in lieu of the old one and that such action would discharge the liability under the old guaranty," said the court.

Surety

"I'VE TAKEN the local agency for the Inland Finance Corporation, and they want me to put up the usual \$1,000 bond. Will you sign it?" the contractor's former bookkeeper asked.

"Why don't you get the usual bond from a surety company?" he asked.

"Oh, you needn't be afraid," the ex-bookkeeper assured him. "I'll deposit \$1,000 cash with you, you can deposit the cash in the bank in your own name, hold it as long as the bond runs, and credit me with the bank interest."

"I don't see how I'm running any risk that way," the contractor, agreed, signed the bond, accepted the cash, and deposited it in the local bank, after explaining the circumstances to the cashier.

"We can arrange that easily," the cashier told him, and handed the contractor a deposit slip marked "escrow account," and the deposit slip stated at the bottom that the money had been deposited in escrow as surety on a certain bond, "to be used only in case of forfeiture of the bond."

A month later the bank was insolvent, and the State Finance Commission took charge.

"I didn't have enough to my credit to worry about," the contractor assured himself, and demanded the \$1,000 deposit in full from the Commission.

"You've got to take 'pot luck' with the general creditors of the bank," the Commission assured him.

"No, this was a special deposit, I'm entitled to be paid as a preferred creditor ahead of the general creditors," the contractor

contended, and the Missouri Court of Appeals ruled in his favor in *Marshall vs Farmers & Merchants Bank* reported in 255 S. W. 15.

"Under these facts the trial court was clearly justified in holding that this was not a general deposit, but was held as a special deposit, the title to which did not go to the bank, but on the other hand, it was acting as a mere trustee or bailee of this fund, to be paid out to the contractor in the event that he suffered loss on account of having signed the bond, and to be checked out by him and paid back to his friend in case he was not required to pay anything by reason of having signed the bond," said the Court.

The "Stock" Note

"CASH IS SIMPLY out of the question," the Michigan customer declared.

"And so is waiting any longer," the Michigan contractor informed him.

"Now, I'll tell you what I can do, and all I can do," the customer averred. "Here's Henry White's note in my favor for \$800, and that will pay your bill and leave \$15 to the good. The note has only three months to run, I'll endorse the note to you, you receipt the bill and pay me the difference."

"Endorse the note quick," the contractor agreed, and reached for his receipt book.

The contractor's willingness to accept this proposal was due to his knowledge that White was perfectly good for ten times the face of the note, but when the note fell due, White refused to pay, and the contractor was forced to sue.

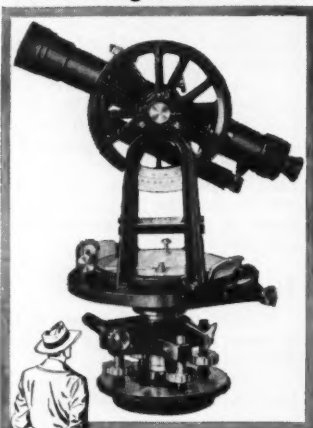
"The note was given for stock in a corporation, the stock was sold contrary to the Michigan Blue Sky Law," White proved in court, and his lawyer contended that the note, therefore, could not be collected.

"That would be true, if the payee of the note were suing White but it doesn't apply to a case like this where the contractor took the note before it was overdue, in good faith, for value, and without any knowledge of the circumstances," the contractor's lawyer retorted, and the Michigan Supreme Court upheld this contention in *Home Savings Bank vs Gilbert*, reported in 194 N. W. Reporter, 553.

Have you seen the important

NEW FEATURES

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Yes, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

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Compare the David White Engineers' Transit with all others — feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

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We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

Water Tower Welding Costs Cut With Selenium Rectifier Units

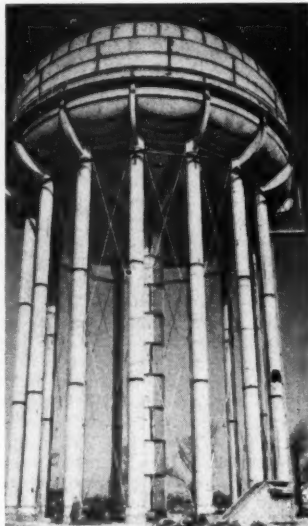
IN ERECTING a 2,000,000-gal. steel water tower for Niagara Falls, N.Y., the Pittsburgh-Des Moines Steel Co. reports considerable savings in welding costs by use of eight Westinghouse 400-amp selenium rectifier welders in place of rotary welding machines originally contemplated for the job. Cost savings were claimed in original

equipment investment, in fuel, and in maintenance of the machines. The tower, 101 ft dia and 139 ft high, supported by 16 44-in. tubular legs, required 748 tons of steel and 8 tons of welding rod for its fabrication and erection.

Because the tank was erected outside the commercial power zone, Pittsburgh-Des Moines decided to use a 60-kw General Motors 115-hp diesel-electric generating set to power eight selenium rectifier units. The only alternative was eight separate welders each driven by a diesel engine.

Original investment costs were reported as only 50% of that of eight separate welding machines. Fuel cost savings were 70%, as the single big generator used only 33 gal per day against an estimated 120 gal per day for eight individual units. Lastly, the contractors claimed 85% savings in maintenance and service.

These savings are partly attributed to the low standby power required by the selenium rectifier machines, since less fuel is consumed during idle time. On this job the welding duty cycle was relatively low. The generator and rectifiers weigh 62% less than eight separate engine-driven welding machines, resulting in savings in handling and shipping costs.



THIS SPECTACULAR WATER TOWER (top) at Niagara Falls was arc-welded by eight Westinghouse selenium rectifier welding machines, five of which are shown here, powered by 115-hp diesel-electric generating set at considerable savings in cost, according to the fabricator.

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Austin Overshot Loader



Check these outstanding features:

Drive...simple, positive; no cable or hydraulic drives; wears longer.

Front Power Takeoff...gives live bucket without master clutch being engaged; accurate control; easier to operate.

Mounts on Main Frame of Tractor

Doesn't Interfere With Servicing of Tractor

Pre-Assembled...entire drive unit is assembled and adjusted at factory—ready for you to put on.

Doesn't Interfere With Drawbar

Automatic Control...bucket stops automatically in dumping position.

Brake Control...hydraulic brake on rear spool shaft to control speed of bucket return.

Uses No. 24 Cat P.C.U.

Good Visibility for Operator

Easily Converted to Dozer in 20 Minutes

SPECIFICATIONS

MODEL 6 C

Fits wide gauge, non-oscillating D6, without modification. Wide gauge, oscillating D6 can be modified to accommodate the 6C.

Standard Bucket Capacity in cubic yards (rated)1½

Bucket width6' Overall height.....18' 4" (bucket raised)

Overall width9' Overall length.....20' 8" (bucket lowered)

No. of bucket teeth.....6 Loading cycle (seconds)15

Dumping clearance.....8' 1" Overall height.....8' 2" (bucket lowered)

Weight (approx. pounds)9,300

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CONSTRUCTION LABOR NOTES . . . By JIM CONNOLLY

Five-Minute Agreement Takes 20 Days

A Building Service Employees local recently picketed an entire block taken up by the Good Samaritan Hospital in Portland, Ore., including construction work under way on a new wing. Construction tradesmen stopped working, in allegiance to their AFL reciprocating agreements; then got busy explaining that they had nothing to do with conditions existing between the hospital management and the service employees.

For some strange reason, 20 days went by before pickets were withdrawn from that portion of the grounds concerned with the construction activities, apparently by agreement between the Building Trades Unions and the striking service workers who were still picketing the hospital entrances up until the middle of May. Seems like a terribly long time to make such a simple agreement.

Peace Between Utility and Construction Men

The Ohio Fuel Gas Company of Toledo engaged two contracting firms to lay distribution pipelines within the city—which didn't set too well with CIO Utility Workers. Their union instituted a grievance, and the case was brought before an arbitrator, Judge Aaron B. Cohn, former Municipal Judge in Toledo, who ruled in favor of the company, contending that the union could not be hurt as long as no union jobs were in jeopardy. Evidence presented by the company showed that union men were then on a 7-day work week, since reduced to 6 days, 9 hr a day. The union then requested a review of the decision, which upheld the original decision.

H. L. Gentry Construction Co., Jackson, Mich., and Midwestern

Contractors, Inc., Wheaton, Ill., are now at work on the distribution lines on a 6-day week, matching the gas company's regular utility men, and all hands seem happy with the arrangements.

Contractors' rates are higher, but the utility men are satisfied with the take-home pay for their 9-hr, 6-day week.

Union and Contractor Jointly Liable

In a recent case in New Jersey, NLRB found the union and employer jointly responsible for a laborer's loss of wages following his discharge for failure to pay a union fine. To increase attendance at regular monthly meetings, the union had adopted a fine of 50c for absentees, which the employee refused to pay. At the union's request he was discharged by the employer, undoubtedly as an example to others, but NLRB ordered him reinstated and instructed the employer and local to make good jointly the pay lost meanwhile.

No Dismissals Because of Age

Gaining favor in many other states is a Massachusetts law, the first of its kind in the country, making it illegal to dismiss without cause, or to refuse to hire, reinstate or promote workers between 45 and 65 because of age. Enforcement is in the hands of the Massachusetts Commission Against Discrimination, which commission investigates all complaints filed by individuals. It has wide discretionary powers, including the right to seek a court contempt order if, after a hearing, its directions are ignored by an employer.

Richmond Engineers Sign New Contract

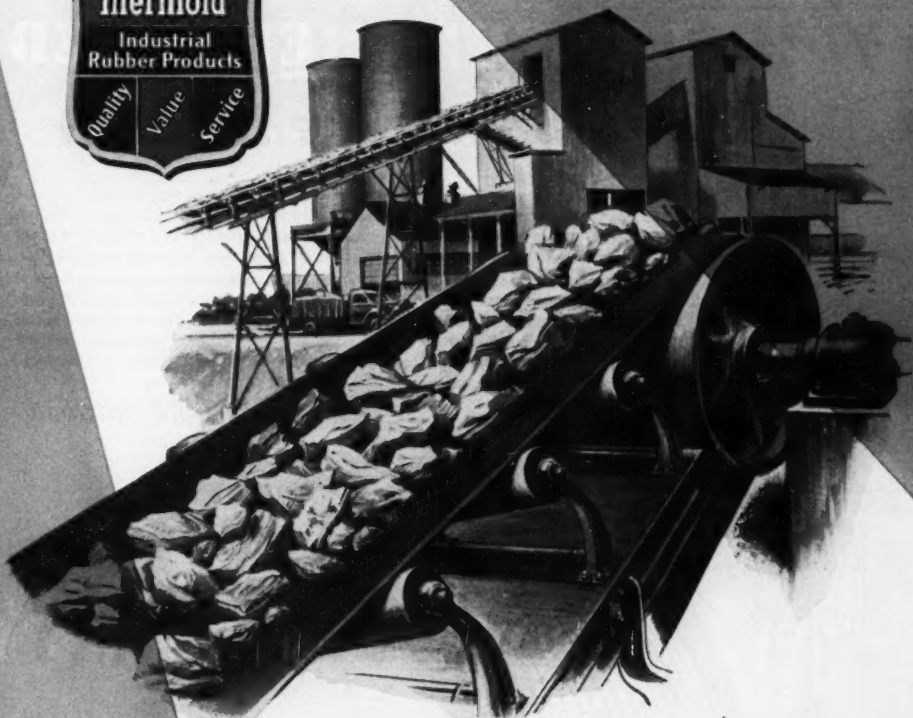
A 10-day strike of Operating Engineers recently ended with the signing of a new contract, under negotiation since last October for the Richmond, Va., area. The new contract provides for a 10% across-the-board increase, but does not contain the guaranteed 40-hr week the engineers wanted. In its place the contractors have agreed to: (1) premium wage payments including time and a half for over 8 hr a day, with double time for Sundays and holidays; (2) provision for negotiation on the question of travel pay for a worker sent outside Richmond; (3) two hours' reporting pay, and (4) pay until noon for any fraction of work during the morning; to quitting time for fraction of work in the afternoon.

The new contract jumps the top operators from \$2.12½ to \$2.33¾ per hr.

NLRB: Must be Certified

In an attempt to force Armco Drainage and Metal Products Inc. to bargain with them at their Portland, Ore. plant, AFL Local 320 of the Construction Laborers induced its members employed by Yonker & Pettijohn, Portland contractors, not to handle manholes and sewer pipe made by Armco. A unanimous decision of the NLRB ordered the union to cease the secondary boycott immediately, and further ordered them not to attempt to force Armco into a bargaining agreement until they were certified as the proper bargaining agent. An NLRB election since held at the plant resulted in the men voting "not to go back into the union from which they had been decertified two years ago."

(Continued on page 99)



"Whatever Your Conveyor Belting Problem . . . Thermoid Has The Answer"

Whatever the job—whatever the nature of the materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—there is a Thermoid belt built to do the job at the lowest cost per ton of material handled.

Thermoid belts are made with an extra margin of endurance. You will find they stay on the job long after ordinary belts fail. With Thermoid, you will have fewer delays due to belt breakage or premature wear. Your Thermoid distributor will be glad to help you with your requirements.

Here's The Book That Will Answer Many Of Your Questions



Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled...how to determine capacities, speeds, weights and number of plies.

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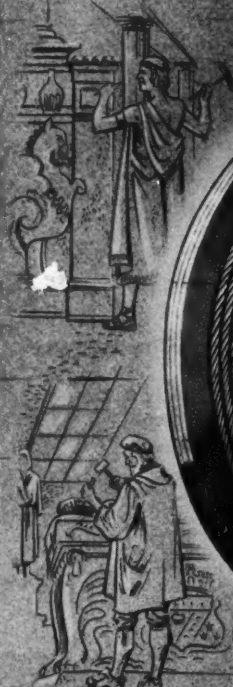
LAY-SET PREFORMED

-a distinctive **BRAND**



Recent excavations in Egypt revealed bricks bearing names believed to be those of the makers. Stones in the walls of Pompeii bore the proud marks of Italian stone cutters. During the Middle Ages the workman placed a distinctive mark on his artistic creations. Thus grew the practice of branding merchandise. Making wire rope which can bear the proud LAY-SET trade mark is traditional with HAZARD. Since the day in 1846 when Erskine Hazard built the first machine which laid a group of wires around a core to make a better wire rope, the HAZARD brand on a reel has been evidence of highest quality. It is your assurance that the wire rope will perform to your satisfaction.

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COMPLETE LINE OF
Registered
WIRE ROPE SLINGS

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LABOR NOTES

(Continued from page 96)

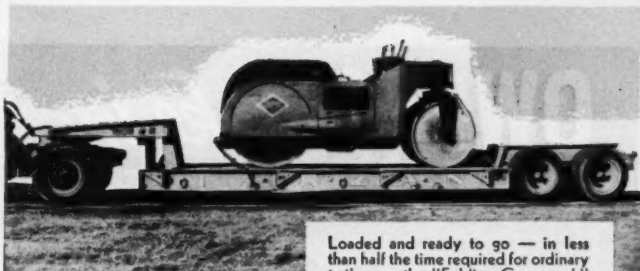
H-Bomb Prevailing Wages

There is much speculation as to what wages will apply to construction workers on big government jobs in present non-union areas. Labor Secretary Tobin made a crucial Bacon-Davis Act decision in mid-February by tying wages on AEC's Savannah River H-bomb project to local existing rates in South Carolina counties of Bardwell and Aiken. Neither Tobin nor officials of AEC expect to fully man the project at these comparatively low rates which present no incentive for needed skilled mechanics from other eastern states. Instead provisions have been made for AEC and the contractor, E. I. DuPont de Nemours & Co, Inc, to make necessary future adjustments in accordance with applicable laws. Atlanta's rates were used as the base for skilled craft rates since none was available in the immediate area.

All rates are straight time, not including health and welfare fund contributions collectively bargained for between contractor groups and labor organizations in some areas. In all, some 35,000 construction workers may be needed and results of the Savannah River project may well set up a precedent for future multi-million dollar government defense jobs.

Bar Picketing of "Open Shop" Firms

Hugo A. Tagatz, Waukesha County Master Plumbers Assn. president, won a technical K.O. over the Milwaukee Building and Construction Trades Council and Plumbers Local No. 75 when a circuit court judge ruled constitutional a previous order of the Wisconsin Employment Relations Board barring picketing of "open shop" contractors; the ruling resulting from the labor board's appeal for a Circuit Court enforcing order. The board had ordered the defendants to cease and desist from picketing at or near any job performed by Tagatz and to refrain from boycotting or "in any way inducing others to boycott" customers



Frank Mascali & Son, Inc.
New York Contractors

Loaded and ready to go — in less than half the time required for ordinary trailers — the "Folding Gooseneck" provides greater clearance for viaducts, wires and other obstructions . . . allows faster, safer travel.

Select the MARTIN "Folding Gooseneck" Trailer!



Charles Mascali says, "The faster loading of the Martin Trailer, plus the labor-saving, one-man operation, led us to select it for our equipment-moving work. It also saves the cost of skids and blocking."

Moving heavy equipment through crowded city streets . . . loading and unloading in narrow confines . . . insuring pedestrian safety . . . keeping costs low—these are the problems that contractors working in large cities must meet. *These are the problems that Frank Mascali & Son, Inc., L.L., New York met with a Martin "Folding Gooseneck" Trailer!*

The Martin "Folding Gooseneck" Trailer can answer your moving problems—on city streets or on back-country trails. Your Martin-"Caterpillar" Dealer can show you its amazing operation . . . its cost-cutting features. Call on him—today!

MARTIN MACHINE COMPANY • KEWANEE, ILLINOIS



The Martin "Folding Gooseneck" unfolds to form its own gentle ramp. There's no dangerous blocking—no winching of low-traction units, such as this roller. Loading or unloading is accomplished by one man!

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OWENS *take in* "A LOT OF TERRITORY.."

they're
DESIGNED
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for that!



"A Mouthful at Every Bite," with more bites per day takes in a "lot of territory," whether you're operating in sand, gravel, mud or coal with an Owen Bucket on your boom.

Owens are on the job in lots of territories all over the world. Insuring a bigger day's work, every day and satisfying more operators and contractors every day.

OWEN ROCK GRAPPLERS of improved, latest design are available in various types with full blade, semi-blade, or rock tines independently acting tines.

Write for the catalog.



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Breakwater Avenue • Cleveland 2, Ohio
Branches: New York, Philadelphia, Chicago, Berkeley, Calif.



Rapid loading of hopper cars is easily accomplished with this Owen Bucket.



of, or persons doing business with him.

Defendants' attorneys claimed the board's ruling abridged Constitutional free speech provisions in its findings that the unions had violated state employment peace acts in pulling all workers from four jobs on which Tagatz had plumbing contracts. State laws also guarantee employees the right to refrain from affiliation with unions, and the board declared the defendants guilty of attempting to coerce Tagatz to interfere with these rights. Building Trades counsel Alfred Goldberg will take the issue to State Supreme Court, indicating the test might be made in other cases now pending.



Sorry...

IT SEEMS we slighted Boise's Idaho Sprocket & Machine Works in describing our April cover, which showed Morrison-Knudsen's Cedarapids crushing plant. The former's shops handled the entire conversion of the plant to all-electric drive, and also manufacture the Schrock motorized head pulleys that drive the conveyors and which make the crusher unique. The compact pulleys contain their motor and reduction gears inside the drum, eliminating chains, jack shafts or belts. Here's a closeup of one on the unit in our April cover.

TAKE CARE —

two mighty important words for owners of construction equipment these days. With the military taking most of the new machines, and with controls in force, taking care of present equipment is vital. And our Third Annual Equipment Maintenance Issue, coming in July, will show how to take care properly and profitably.

For better service and more economy use

MACWHYTE WIRE ROPE

A thousand and one
to order from assures the
right rope for your equipment



BULLETIN 5025 gives information on "How to order Wire Rope" and lists all sizes and constructions of Improved Plow Steel Monarch Whyte Strand Wire Rope. Copy sent on request.

Over the years, ropes for all types of equipment in every field have been developed by Macwhyte. It will pay you to specify Wire Rope . . . engineered and job-proved for your particular equipment.

Recommendations are promptly available from Macwhyte distributors or Macwhyte Company.

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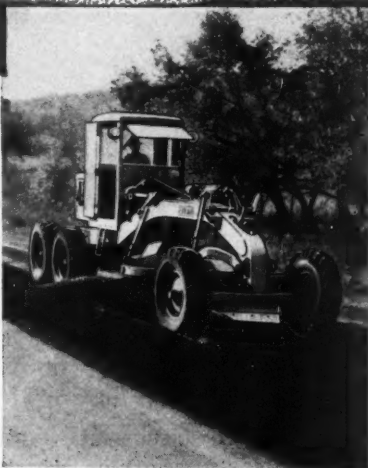
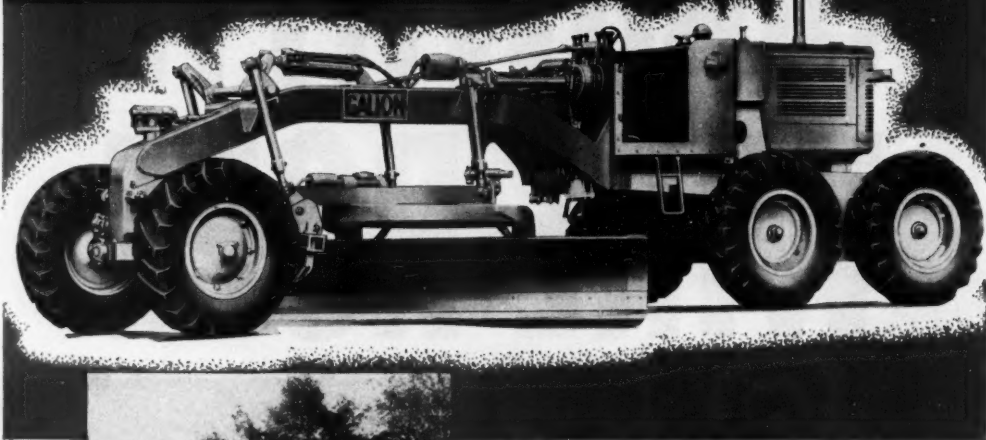
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Special Backhoes on Odd Pipeline Ditching

REGULAR DITCHING MACHINES are doing a fine job in cutting the trenches for thousands of miles of pipelines now under construction in this country. But there are many ground conditions under which these machines can't work efficiently. Therefore, to keep up with the high-speed schedule of today's pipeline construction, many a smart contractor is using special excavating equipment to supplement his ditchers.

A good example is the way Eastern Construction Co., Dallas, used

a fleet of ten Lorain TL-25 Pipeliner Junior backhoes on their 155-mi section of 22-in. line between Oakland and Clarkville, Tenn. This is part of a 1,000-mi line being built by Mid-Valley Pipeline Co. from Texas to Ohio. Eastern built their section with two equipment spreads—one 69 mi in charge of Cliff Simmons; the other 86 mi headed by L. A. Stewart. The contract was recently completed two months ahead of schedule.

These three views show typical odd trenching jobs done by the

special Lorain backhoes, equipped with wide-gage crawlers so they can straddle the ditch. At upper left is a backhoe working out of a creek bottom up a very steep slope. Another similar rig at upper right is digging through swampy ground, assisted by a Lorain crane and clamshell unit. Bottom view is that of a backhoe working down hill through rocky ground. Note the snubbing line leading to a tractor to help hold the machine on the precipitous slope. All these photos are from the Thew Shovel Co.

Euclid Monsters to Haul Fill at Fort Randall Dam

By HAROLD W. RICHARDSON, Editor



TEN OF THESE 38-yd Euclid end-dumps, rated at 100,000 lb payload, will haul fill for Fort Randall Dam for Western Contracting Corp. They are powered by two 300-hp Cummins diesels placed side by side.



THEY'RE JUST AS BIG from back end as from front. Bodies, hoisted by twin hydraulic rams will raise to 64-deg dumping angle for quick discharge. Engine exhaust blown between skin plates heats part of body.

THEY CALL IT THE MONSTER in the shop where it was built—and that's a mighty appropriate name for the first of ten big special-design end-dump trucks being built by Euclid Road Machinery Co. for Western Contracting Corp.'s 18,000,000-yd rush job at Fort Randall Dam on the Missouri River. And monsters they are, rated at 100,000 lb payload with a struck capacity of 32 cu yd, and a heaped capacity of 38 yd. They are powered by two 300-hp Cummins diesels set side by side under the circus-tent-size hood, each engine driving one set of dual tandem wheels through a torque converter.

Western decided 10 rigs of this size were what they needed to meet their stepped-up schedule at Ft. Randall. Details and specs were

agreed upon in conferences between Western and Euclid officials, and the contractors ordered the trucks sight unseen—a tribute to the integrity and confidence of both sides.

In keeping with the big scale of earthmoving operations, Western has ordered a special Marion 10-yd diesel-electric shovel that will load a truck in three passes.

These Euclids are big. The bodies are 22½ ft long, 11½ ft wide inside and 46 in. deep, dumping at 64 deg. Loading height is 10 ft 10 in. Body walls and bottom are double steel plate, and hot exhaust gas is passed between skin plates as a heating element to prevent icing up of the insides in cold weather. The bodies will be dumped by two 8½-in. three-stage double-acting hydraul-

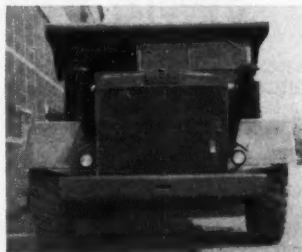
ic rams that have a stroke of 6 ft.

Wheelbase is 18 ft 3 in.; over-all length is 36 ft 4 in.; over-all width is 13 ft 8½ in. Maximum height is 11 ft 9 in. from cab-guard to ground. The frame is all-welded, with main rails of 18-in. 70-lb I-beams. All ten tires are the same size—1800x33, 24 ply. Chassis and body are mounted on semi-elliptic free floating springs.

The two Cummins NHRS 600 diesel engines rated at 300 hp each at 2,100 rpm, are located side by side. Each drives through an integral Allison torque converter to one set of the dual tandem drive wheels. Final drive is through the standard Euclid floating planetary reductions in each drive wheel. Allison transmissions permit three forward and one reverse speed. Maximum speeds are, in the three gear ranges: Loaded, 8.8, 16.0 and 32.1 mph; empty, 9.4, 17.3 and 38.2 mph.

Much attention has been paid to the comfort of the operator. Heavy-duty air brakes and Vickers hydraulic booster steering make driving easy. The cab is offset to one side, visibility of the driver is excellent. He is protected by a heavy cab-guard extending forward from top of body. The seat, adjustable to position, is mounted on springs—also adjustable—controlled by hydraulic shock absorbers. A 440-gal fuel tank stretches out the time between service stops.

The first of the ten units is now on the job, shipped knocked down on two flat cars for clearance.



CAB IS OFFSET to left for better visibility. Shatter-proof glass throughout protects driver. Truck is strictly an off-the-road rig, as over-all width shown here is 13 ft 8½ in. It's 11 ft 9 in from top of cab-guard to ground.



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and economy of certain operation on your present equipment. For, there's an American Bosch Magneto precisely engineered for the largest heavy-duty engines, right down to the most modern, high-speed power units. Moreover, when you install a new American Bosch Magneto, there's a generous trade-in allowance on the old magneto you replace. Ask for the cost-reducing, profit-producing facts and the name of your nearby American Bosch Dealer.



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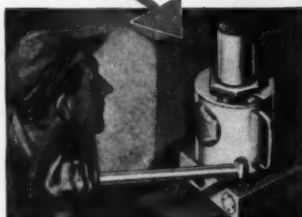
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ELECTRIC WINDSHIELD WIPERS • DIESEL FUEL INJECTION EQUIPMENT**

AMERICAN BOSCH CORPORATION • SPRINGFIELD 7 • MASS.

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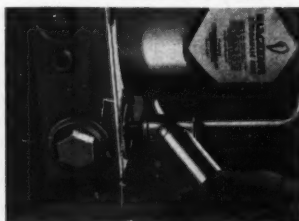
50-Ton Capacity
Model 98-11
Weights only 71 lbs.



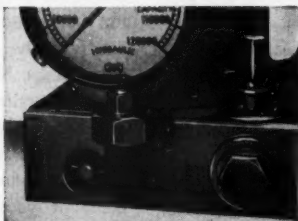
PATENTED DOUBLE PUMP—all in ONE unit! Speed pump provides fast load contact—power pump cuts in automatically! No shifting of handle, no double-yoke as with separate pumps.



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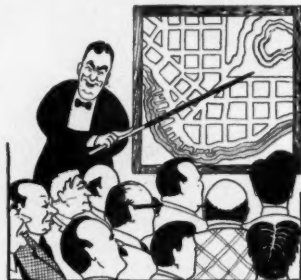
BLACKHAWK

"PORTO-POWER" • PIPE BENDERS • WRENCHES

(Continued from page 59)

and 3,019 crowbars of various sizes. Lists also include over 2,000 pumps of all types, sizes and capacities; 1,600 oxyacetylene, welding and burning outfits; 664 air compressors and 451 auxiliary generators. That gives a rough idea of the magnitude of the inventory.

With the use of film, slides and other visual aids, 600 PWED personnel have been trained for defense in atomic warfare, in addi-



tion to 500 trainees enrolled in the Red Cross Instructors' Course. More than 300 have been graduated and are now, in turn, instructing other groups.

At present the Public Works Emergency Division is continuing its untiring efforts to bring together everyone who can contribute to effective preparedness. Negotiations are under way to enroll thousands of skilled and unskilled construction tradesmen in the various segments of the Building and Construction Trades Council, AFL. Similar meetings are being held with architect associations and equipment rental groups.

PWED is most anxious to shy away from any confiscatory action, which would result in endless damage- and improper-handling disputes, not to mention complex bookkeeping problems which accompany post-war payments. Instead they are depending upon the present organization within the construction industry to handle matters and coordinate operations under emergency conditions just as they do on regular work every day. The byword is minimum disruption and changeover.

Arthur W. Wallender has been appointed by New York's Mayor Impellitteri as director of the Office of Civil Defense. Fred H. Zurmuhlen, commissioner of Public Works, is director of the PWED, assisted by Albert H. Morgan, executive deputy director and Byron T. Conrad, coordinator.

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We Mobilize for Freedom

WHY Controls are Necessary

One of the encouraging characteristics of the American people is their dislike for government controls. This augurs well for the future of their economic and political freedom.

But for the next few years we must not only tolerate but also help to make effective a whole battery of emergency government controls over our economic life. If we fail to do this now the future of that freedom we cherish will be imperilled. It is the purpose of this editorial—the third in a special series—to explain in simple terms why this is so.

After our military victory in World War II, we rushed through a demobilization which cut our military strength to about one-tenth of its wartime peak. Our allies did much the same thing. But the Russians maintained much of their wartime military strength and built up that of their satellites. With prodigious speed we switched from military to civilian production and went on to enjoy a rousing postwar boom—the greatest in our history.

This boom was in vigorous progress when, on June 25 last year, the Russian-sponsored North Korean army attacked South Korea. Our industrial production was rolling along at almost twice its prewar level. We had labor shortages in many key industrial areas. Under the impact of heavy buying all along the line, prices were climbing.

When the North Koreans smashed into

South Korea they smashed into our national consciousness this fact: if we want a fair chance to save our national freedom from destruction by Communist aggression, we must race to restore some of the military power we had so speedily written off after World War II. And we must do it with our resources already very fully occupied with a boom in civilian business.

Program Small Compared to World War II

Compared with our military effort in World War II, the mobilization on which we are now embarked is small. At its peak, under present schedules, it will absorb no more than one-fifth of the total national production. During World War II we reached a point when nearly half of our total production went for war-making.

Moreover, our economy now is much bigger and stronger than it was in World War II. During the last decade there has been an increase of about 15 percent in our labor force. Our workers have had the training advantage of steady employment. The capacity of our industrial establishment is two-thirds again as great as it was ten years ago. Since the war no less than \$70 billion has been spent to expand and modernize it.

Given time, the industrial giant we have created could pick up in its stride the added load of production for defense that now is con-

templated. But speed is of the very essence. There is little dissent from the proposition that if we are to stand off Russian aggression successfully we have, at the outside, two years in which to get ready.

Controls Needed to Prevent Chaos

These two facts — (1) the necessity for speed in our rearmament program and (2) an economy already stretched taut by a record civilian boom—create the general necessity for government controls. If we simply pile the billions of added defense expenditures authorized since last June on top of the civilian boom, and let it go at that, two destructive developments would follow. There would be a scramble for scarce materials, notably metals, which would create chaos in those markets. And prices would go through the roof.

Our situation during this mobilization is radically different from what it was when we rushed to get ready for World War II. Then we started with an economy that was coming out of a long depression. There was plenty of slack. Even in mid-1941 we still had over 6 million unemployed. Thus it was possible for us to expand war production greatly and also increase civilian living standards before the limits of our productive capacity made extensive controls necessary. But as we begin this new mobilization we find our economy already operating virtually at capacity. This fact is of key importance in understanding why this relatively small defense program so quickly requires the imposition of controls.

The selection and administration of controls thus far has been badly bungled. The threat of price controls, for example, was broadcast so vigorously and for so long that our people were virtually asked to raise prices and thereby do much to defeat the controls. Adequate taxation directed so as to attack inflation at the source and thus give direct price control a chance to operate has not yet been provided.

Indeed, we could readily assemble a long and devastating catalog of the deficiencies of

the government's control program. But that would not dispose of the necessity for controls—by priority, by allocation, and, as a stop-gap, by direct prescription of selling prices—if we are to carry out our mobilization successfully. That is the only means by which a clear right of way for defense production can be cut through the highways of trade and commerce now jammed with civilian boom business.

Hope In The Wilson Plan

Since he became Director of Mobilization, Charles E. Wilson has added a new element of order and hopefulness to the mobilization program. He has laid out a plan which, if we are spared all-out war, would do three things by 1953. First, it would produce the weapons needed by our army and our allies to meet an immediate threat. Second, it would create the capacity that would enable us to move at high speed into weapons production for all-out war—if necessary. Third, it would create the additional production capacity that would restore by that date our ability to resume the climb of the American civilian standard of living.

In technical and industrial terms the Wilson Plan seems to be feasible. If it is successfully carried out, we should be able to begin getting rid of controls rapidly by 1953. But to carry out the program successfully, it must now have vigorous support from everyone. That does not mean mere agreement that it is a good plan. It means that we must conform to the controls that are necessary to make the plan work. In developing this support, the business community is in position to exercise crucially important leadership.

As has often happened in our national history, we are confronted by a paradox. We must accept emergency controls for the time being to insure survival of the freedom that they infringe. But, as we do this, we may find some comfort in the reflection that while controls from Washington are hateful, controls from Moscow would be infinitely worse.

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Operating advantages? More than you've ever known in a machine of its size. Magnetorque Swing does away with the old swing frictions — with all their

headaches — forever. It's faster — 15% to 25% faster.

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*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

CONSTRUCTION EQUIPMENT NEWS • • A Preview of

By MELVIN DEAN, Equipment Editor



BLOCK-UNLOADING TRAILERS permit discharge of load without spilling or breakage. Movement of load is controlled by a winch-and-brake assembly. After load is lowered to ground surface, winch lines are removed and the vehicle drawn forward, leaving the load in one complete pile. Platform and tail-skid are raised by hydraulic rams. Tail-skid when raised to vertical position

acts as protection for the load, and shortens over-all vehicle length. A special binding device holds the two rear cubes of blocks so that they act as one, preventing spillage during unloading. Special advantages claimed include complete one-man operation, and total unloading time of 5 to 10 min.—**Arthur Rehberger & Son, Inc.**, 320 Ferry St., Newark 5, N. J.

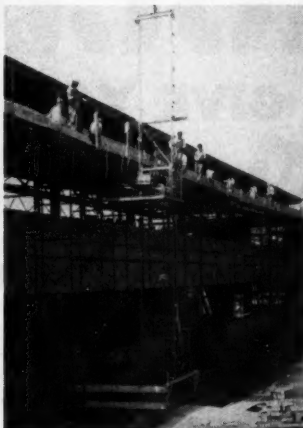


PORTABLE ELECTRIC HAMMER is available in heavy-, medium-, and light-duty models. It is 22 in. long weighs 21 lb. and strikes 1,300 blows per min. There are 53 different tools available, with 119 additional variations of them. Striker is reciprocated by two centrifugal weights. Clutch prevents overload.—**Allied Tools, Inc.**, 321 Central Ave., Newark 4, N. J.



SMALL-SIZE TRACTOR-LOADER features 2-speed transmission, final drive running in oil, fully shielded bogey carriage, and spring-loaded front idler wheels. Small size of the M-6 High-Lift permits pivoting within its own length, providing high maneuverability. Recommended operations include loading skip mixers and small trucks, ditching and weed

control, leveling operations where larger machines cannot work, and for backfilling trenches and street openings. Attachments available for use with the M-6 include a Mott hammer knife mower, rotary broom, tote wagon, rubber treads, rotary tiller, and other special tools.—**Mead Specialties Co.**, Dept. HL-131, 4114 N. Knox Ave., Chicago 41, Ill.



PORTABLE HOISTING TOWER can be hitched or unhitched, folded or unfolded, and raised or lowered by one man. Single-drum hoist has a 100-fpm speed. Power is from a 7-hp gasoline engine. Load capacity is 1,000 lb. Standard unloading height (extra sections available) is 25 ft.—**The Finn Equipment Co.**, 2525 Duck Creek Road, Cincinnati 8, Ohio.

New Machinery, Tools and Equipment That Will Help You on the Job



COMBINATION COMPRESSOR AND BACKHOE is tractor-mounted for high mobility. The Henry backhoe attachment is a hydraulic unit employing 12- to 22-in. buckets. It digs to a depth of 7 ft, swings 60 deg right or left, and has a positive stop at center to assure straight-line digging. The compressor has a capacity of 105 cfm. Over-all length of the unit when in travel position is 18 ft 0 in.; over-all height in travel position is 11 ft 0 in.; weight of the complete unit is 4,810 lb. A hydraulically actuated bucket is available as an optional attachment.

—LeRoi Co., 1706 S. 68th St., Milwaukee 14, Wis.



LUBRICATORS FOR CONSTRUCTION EQUIPMENT

are available in two general classifications: Ready-to-work completely assembled units; and job-planned units, selected and assembled by the contractor for his particular needs. Job-planned Convoy Lubers consist of pumps, hose reels, and other major component parts, ordered in any quantity or combination. Lubricants are delivered from original containers (or from lubricant hoppers, if desired) and dispensed through reel-mounted 30-ft-long hoses.—Gray Co., Inc., 60 Eleventh Ave., N. E., Minneapolis 13, Minn.

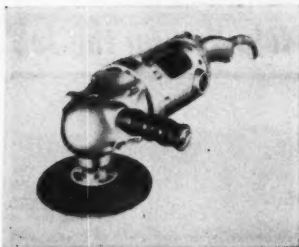


LIGHTWEIGHT ENGINES FOR PORTABLE SAWS are easily transported by car or light truck. The 350-watt Kohler K7-1 gasoline engine develops 2 hp. It has a total weight of 38 lb. Power is transmitted by a flexible-shaft drive. The engine is easily hooked up to any standard circular bow saw or other equipment needing a 2-hp source of power. The engine is recommended as an all-purpose portable engine for use on the job or in construction-company shops. The K7-1 is manufactured by: Kohler Co., Kohler, Wis.



HYDRAULICALLY-OPERATED TRUCK CRANE

has a capacity of 1,500 lb on a 15-ft radius. This capacity can be increased through the use of stabilizers. The Hopto TM is hydraulically operated from a power take-off or independent source of power. The TM will mount on all standard trucks of 1½-ton size, or larger. Total weight of the crane is 2,200 lb. Swing is 180 deg. Maximum lifting height is 23 ft. It operates without drums, clutches, or brakes.—Badger Machine Co., Desk 28, Winona, Minn.



PORTABLE DISK SANDER — Heavy-duty sander (Model 460) has a 7-in. backing pad, is 18 in. long, and weighs 14 lb. The Model 465 standard-duty unit has a 9-in. back-

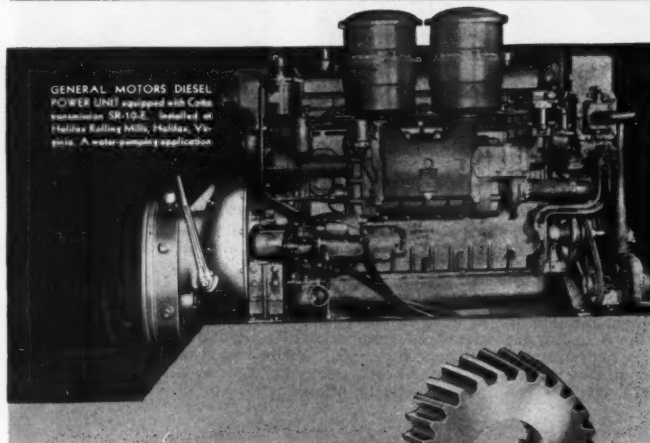
ing pad, is 18 in. long, and weighs 14½ lb. Both are powered by a ¾-hp universal motor and have a non-load speed of 4,200 rpm.—**Cummins-Chicago Corp., Cummins Portable Tools Div., 4740 N. Ravenswood Ave., Chicago 40, Ill.**

PNEUMATIC CYLINDERS — B-50 series of pneumatic cylinders is designed for throttling control service with chemical feeders, drive units, and similar operations. They consist essentially of an O-ring sealed pneumatic cylinder with a piston positioner integrally mounted in the head plate. The B-50 series is suitable for use with air-supply pressures up to 100 psi gage, and are capable of re-

positioning accuracies to 1/500th part of the total travel. Available in 4-, 6-, and 8-in. bores, strokes to 4 in.—**Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.**



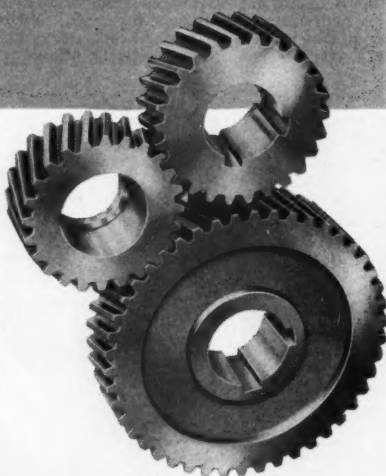
BRIK-TOTER CONNECTOR — Simple connector joins two Brik-Toters providing a conveyor 40 ft long. It is designed to prevent sag or deflection, and to result in a rigid single truss. The connector assembly is available separately and is furnished with necessary bolts. Nuts are pre-welded in all Brik-Toters.—**Mar-Rail Conveyor Co., 560 York Ave., Pawtucket, R. I.**



GENERAL MOTORS DIESEL POWER UNIT equipped with Cotta transmission SR-10-E, installed at Haldex Rolling Mills, Haldex, Virginia. A water-pumping application.

Cotta REDUCTION UNITS

... found in many industrial applications: cranes, shovels, rock crushers, generators, pumps, and the like. Particularly suited for adjusting high-speed Diesel output to the r.p.m. of slower-speed units. Available in a broad range of ratios... Input torque ranges from 150 foot pounds to 1350 foot pounds. COTTA precision-engineered throughout.



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Diagrams, capacity tables, dimensions and complete specifications sent free on request. Just state your problem—COTTA engineers will help you select the right unit for best performance. May we work with you?

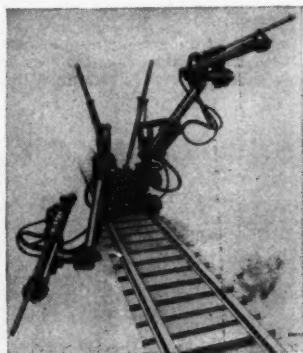


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HEAVY-DUTY
REDUCTION UNITS

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COTTA TRANSMISSION CO., ROCKFORD, ILLINOIS



BOOM JUMBO DRILLING RIG — Standard rig is designed for high-speed driving of drifts, cross-cuts, and tunnels. It can work in an opening with a maximum height of 10 ft and a width of 12 ft. Booms can be purchased separately for mounting on jumbos for large tunnels. Booms are set in drilling position by I-R air motors, relieving operator of all manual lifting. Self-locking worm gear operates screw drive for raising or lowering booms, providing double insurance against boom creeping or settling. Two ceiling jacks (total rating of 32-tons pressure) hold jumbo in drilling position regardless of overbreaks or high ceilings. An optional hydraulic ceiling jack is available.—**Ingersoll-Rand Co., Dept. RD, 11 Broadway, New York 4, N. Y.**

IT'S BIG RUGGED FAST SMOOTH



25-Ton MOTO-CRANE

Everything about the 25-ton Lorain-50 "Series" Moto-Crane is new! From the ground up the "50" is designed and built for 25-ton capacities. These new rubber-tire Moto-Cranes are not modifications, reworkings and "up-ratings" of previous models. However, in designing these new machines, Thew-Lorain has drawn heavily from its unequalled record of over thirty years of experience and "know-how" acquired since building the first rubber-tire "truck-crane" in 1918. The new Lorain-50 "Series" Moto-Cranes are just what you'd expect the leader to produce—a bigger, stronger, safer, better machine. Your Thew-Lorain Distributor can provide full facts!

THE THEW SHOVEL CO., LORAIN, OHIO

25-Ton Crane Boom

- Wider, deeper, stronger
- Quick action pin-connections
- Usable in 100-ft. lengths—130-ft. with extensions
- 6-part direct hoist line reeving with 3-sheave boom head
- Convertible to clam, drag, shovel, hoe, pile driver

Throttle Control

- Smoothest acceleration for raising or lowering loads
- No jerks, jolts or bounces
- A wider range of raising and lowering speeds
- Pin-point precision for spotting loads

25-Ton Turntable

- Hydraulic Coupling gives the smoothest operation—no jolts, bounces
- New, wider shoe type swing clutches
- Turntable rollers on anti-friction bearings
- Uniform-stress Center Pin design

25-Ton Carrier

- Built specially for 25-ton crane and 1-yard shovel stresses and impacts
- Box section frames deeper, stronger
- 220 H.P. gas engine
- 10 forward speeds (30 M.P.H.); 2 reverse speeds
- Man-saving, air-assist steering

2 Models

Lorain-50 "Series" Moto-Cranes are offered in these models:

MC-504—25-ton capacity, 102 in. overall width, "6 x 4" only

MC-504W—25-ton capacity, 120 in. overall width to give greater lifting capacities when working "on rubber," "6 x 6" and "6 x 4"

THEW LORAIN

Look at All Three

for the "Why" behind the Longer Life of Bull Dog V-Belts!

1

Cover

— closely woven, heavy, bias-cut fabric can take the torturing wearing action where the belt contacts the sheave at the same time sealing the belt against the entrance of grease, dirt and moisture.

2

Cords

— Specially Engineered BWH cord section has high tensile strength giving superior load carrying capacity and ability to absorb shock loads. The minimum stretch derived from the exclusive technique used in processing Bull Dog Cords results in less slippage and fewer adjustments.

3

Compression Section

— a BWH-developed compression section of fabric and special compounds permits Bull Dog V-Belts to run cooler and prevents their cracking or deteriorating under severe flexing.

To get the most work and longest life per dollar expended out of power transmission belting, all three factors — cover, compounds and cords have to be RIGHT . . . and Bull Dog V-Belts qualify high on all three counts!

Whether your concern is primarily with production, maintenance or purchasing, you will find there is no better investment in V-Belts than Bull Dogs! They pay off in longer life and lower maintenance costs.

TOUGH PROBLEMS INVITED — Don't hesitate to ask us or your nearest BWH distributor about your power transmission belting, conveyor belting and hose problems. We're specialists in making mechanical rubber products work better, longer.

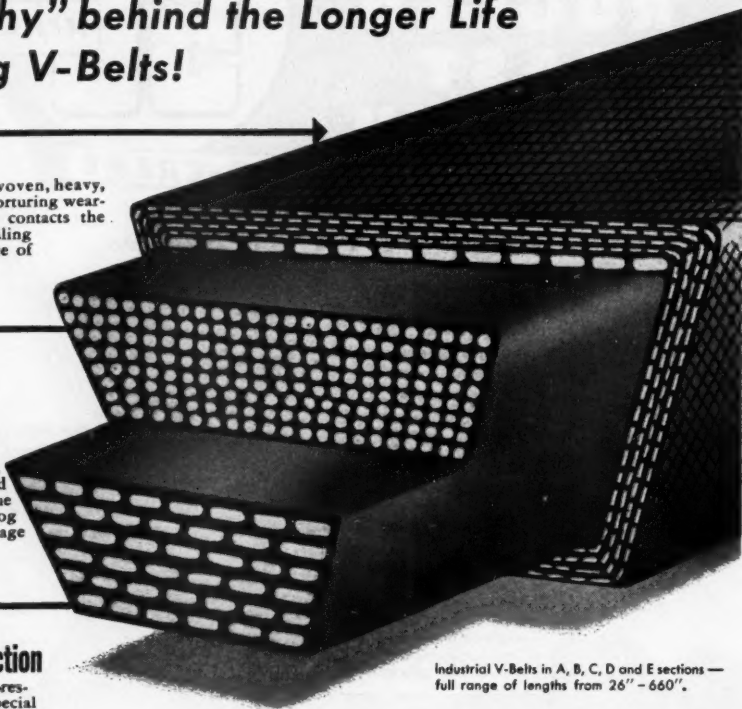


Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.



Industrial V-Belts in A, B, C, D and E sections — full range of lengths from 26" — 660".

BWH
Fractional horsepower
(FHP) V-Belts



COMPRESSION SECTION engineered to withstand continual flexing.

BULL DOG CORDS, comprise a powerful, load-carrying section.

MOTOROLA PUTS ITS MARVELOUS SENSICON CIRCUIT INTO THIS

New "Line" Tool

Making it the best in low-cost

2-WAY RADIO

The UNI-CHANNEL SENSICON DISPATCHER

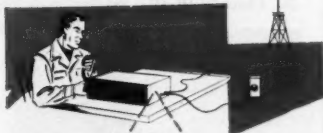
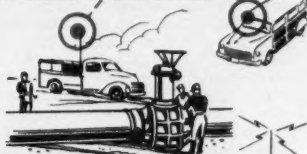


YOU CAN TAKE IT ALONG—ANYWHERE!

- INSTALLS QUICKLY IN ANY TYPE VEHICLE
 - USE IT AS A BASE STATION
 - WORK IT IN WITH YOUR "HANDIE-TALKIE"*
- UNITS for LIAISON WITH CREWS



6 OR 12 VOLT DC VERSION
AS EMERGENCY BASE STATION



117 VOLT AC VERSION
AS A BASE STATION



Eliminate outage, mileage, maintenance and replacement costs at the outset. Select Uni-Channel. It's built to take it—the kind of a tool that belongs with your other gear....

Remember long after other communications have broken or failed, Uni-Channel will continue to give you trouble-free communication—and for good reason....

The unique Sensicon circuit heads the list of EIGHT revolutionary Motorola improvements, putting working facts back of your decision—with low over-all cost the final payoff for your choice.

REMEMBER! Motorola's long experience in practical mobile radio makes Uni-Channel your best choice for day-in and day-out dependability!

**Only Motorola makes the "Handie-Talkie" radiophone!*

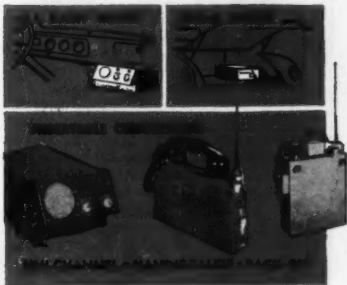
FM 2-WAY
RADIO

Motorola

Radio Communication Systems for Industry

SPECIALISTS IN MOBILE RADIO FOR 20 YEARS

4545 AUGUSTA BLVD., CHICAGO • ROGERS MAJESTIC ELECTRONICS, LTD., TORONTO, CANADA



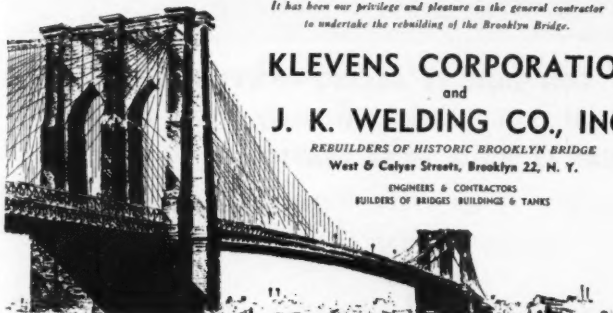


**a TRIUMPH
in ENGINEERING**



...Reconstruction of the BROOKLYN BRIDGE—

It has been our privilege and pleasure as the general contractor to undertake the rebuilding of the Brooklyn Bridge.



KLEVENS CORPORATION

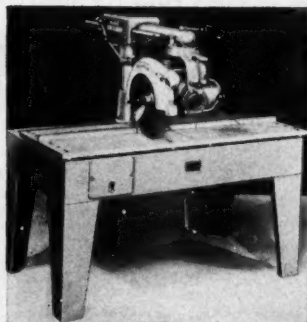
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J. K. WELDING CO., INC.

REBUILDERS OF HISTORIC BROOKLYN BRIDGE

West & Cady Streets, Brooklyn 22, N. Y.

ENGINEERS & CONTRACTORS
BUILDERS OF BRIDGES, BUILDINGS & TANKS



RADIAL SAW—Model 450 saw handles all types of cuts—bevel, rip, dado, plough, and rabbet. Available with manual or magnetic controls. Special stops automatically set saw to common cutting angles. All changes and adjustments are made from one place. The saw is available in a variety of voltage, hp, and motor cycle specifications with either 14, or 16-in. blades. Floor-space requirements are 4½x6 ft. Weight is 475 lb.—Skilsaw, Inc., 5033 Elston Ave., Chicago 30, Ill.

IGNITION MOISTURE-PROOFER—Automotive sealing substance protects ignition systems against corrosion, oxidation, and moisture. Elek-Trik seal is a heavy liquid that creates a neutral zone between electric current and the outside atmosphere when applied to distributor, coil, spark plugs, and battery. The application is guaranteed for 1 yr.—Elek-Trik Seal Laboratories, 151 W. Elm St., Chicago 10, Ill.

STERLING CARTS

For Wheeling Concrete and other Materials

IT STANDS
ALONE

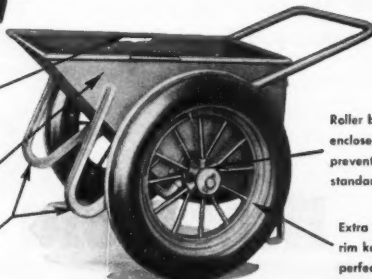


Investigate the unusually sturdy construction of this perfectly balanced cart. It's the best that money can buy. Outlives any other cart. That's why it costs less. Choice of 30" dia. steel wheels or pneumatics. Illustration shows No. 2 PR Cart with dumping rockers and pneumatic tires, 6 cubic foot capacity, water full. Eight other models. Write for Catalog No. 62.

Top edge reinforced with continuous ½" dia. butt-welded rod.

Tray is made of 14 gauge steel.

1¼" T-iron rockers facilitate dumping and cleaning out.



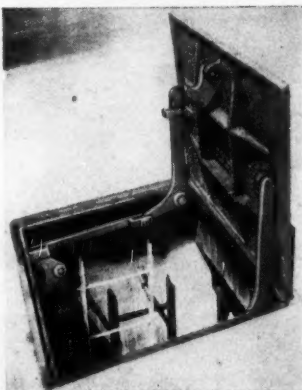
Roller bearings, enclosed in cage to prevent locking, are standard equipment.

Extra heavy steel rim keeps wheel in perfect alignment.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of
STERLING Quality

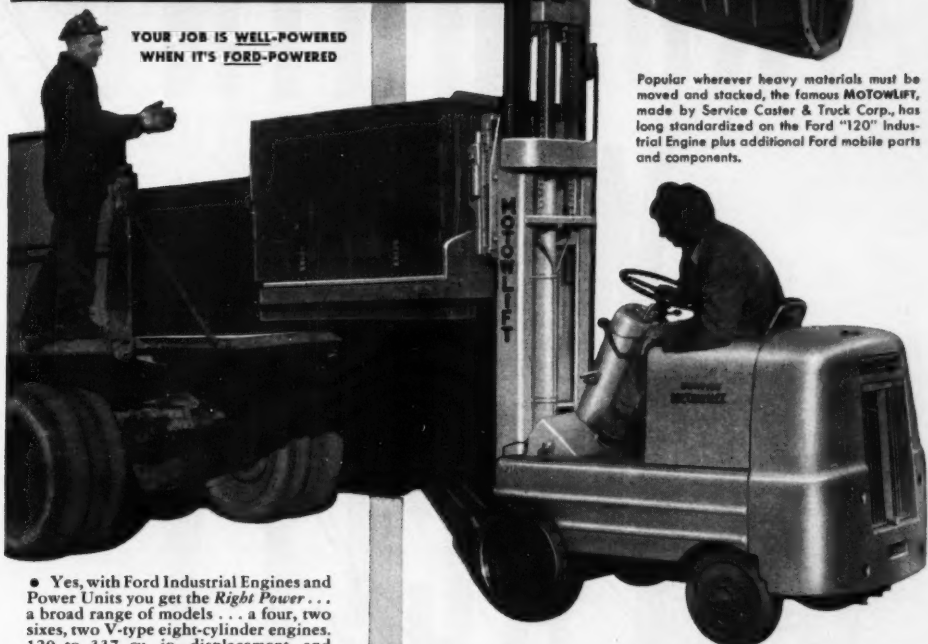
Sterling
WHEELBARROWS



MANHOLE COVERS—Counterbalanced cover is easily opened, and will hold in an upright position. It can be opened from the inside of the vault by one man as an added safety feature. Tamper-proof lock opens only when the combination key-handle is used. The cover provides an unobstructed 30-in. square opening.—The E. H. Wachs Co., 1525 N. Dayton St., Chicago 22, Ill.

Power RIGHT with FORD POWER...

YOUR JOB IS WELL-POWERED
WHEN IT'S FORD-POWERED



Popular wherever heavy materials must be moved and stacked, the famous **MOTOWLIFT**, made by Service Castor & Truck Corp., has long standardized on the Ford "120" Industrial Engine plus additional Ford mobile parts and components.

• Yes, with Ford Industrial Engines and Power Units you get the *Right Power*... a broad range of models... a four, two sixes, two V-type eight-cylinder engines, 120 to 337 cu. in. displacement, and every unit is individually tested, ready to run.

Ford power has the *Right Features*, too... equipment and accessories to meet specific operating requirements. There's Ford Industrial Power for just about every kind of application.

What's more, with Ford Power you're assured of the *Right Service*... as near as your nearest Ford Dealer. This means important over-all operating advantages... replacement parts availability—reducing parts inventory cost... ease of servicing—minimizing costly "down time"... the *RIGHT Power* with the *RIGHT Features* and the *RIGHT Service* for your application.

Here are some typical Ford-powered construction applications:

Pavers... Air Compressors... Hoists
Pumps... Cement Mixers... Concrete &
Bituminous Spreaders... Earth Boring Machines
... and many others.

INDUSTRIAL ENGINE DEPARTMENT
Tractor & Industrial Engine Division
FORD MOTOR COMPANY
Highland Park, Michigan

Our experienced Sales Engineers are at your service in developing engineering recommendations for the most efficient use of Ford Industrial Power in your application.

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

Industrial Engine Department, FORD MOTOR COMPANY
13050 Woodward Ave., Highland Park 3, Michigan

I am interested in Industrial Power for this application:

Send me new 1951 literature on Ford Industrial Power (cu. in. displ. and cylinders as shown).

☐ "120" 4-Cyl. ☐ "226" 6-Cyl. ☐ "239" V-8 ☐ "254" 6-Cyl. ☐ "337" V-8

Firm Name _____ (Please print)

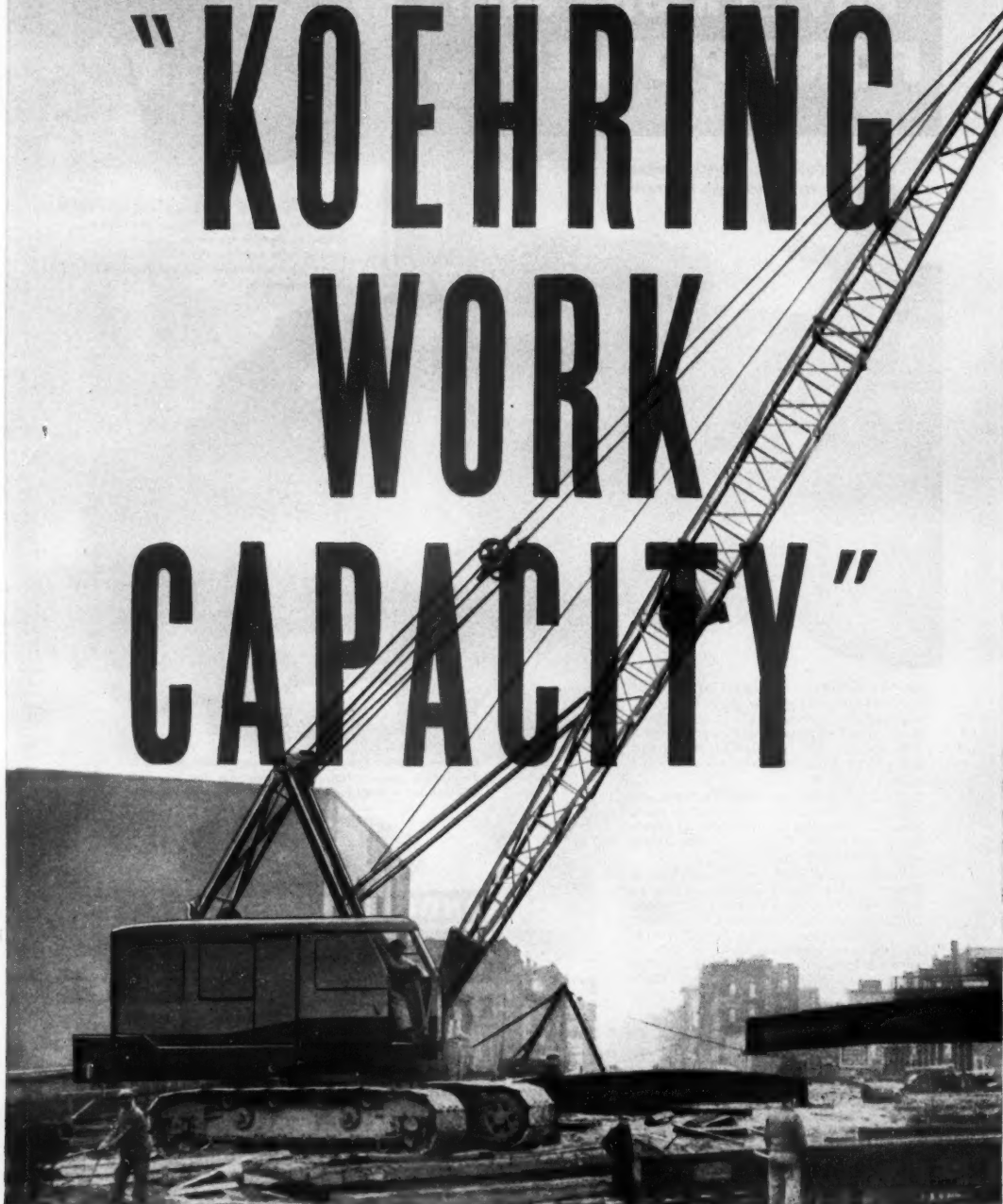
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Street _____

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Measure by

"KOEHRING WORK CAPACITY"



Ask your Koehring Distributor for specific information



**7¾ to 79½ TONS
LIFT CAPACITY**

**½ to 2½ yards dipper
capacity**

**KOEHRING
COMPANY**

MILWAUKEE 16, WIS.

Subsidiaries:
JOHNSON • KWIK-MIX • PARSONS

Over 100,000,000 Yds. Johnson experience

Johnson-engineered Central Mix plants have poured over 100 million cubic yards of concrete . . . experience available to you for top efficiency. Central Mix Plant, illustrated, has All-Welded Portable Section Bin, cement elevator, storage silo, big 56-S concrete mixer, and stockpiling system. For complete plant installations, all sizes, types, or auxiliary plant equipment, it will pay you to call your Johnson distributor, or write to us.

C. S. JOHNSON
Champaign, Illinois



8'-0" discharge with Kwik-Mix Tower Loader

Kwik-Mix Tower Loader attachment discharges bituminous mix into trucks, overhead hoppers, or stockpiles . . . provides 7'-9" discharge height for Kwik-Mix 10 cu. ft. Bituminous Mixer . . . 8'-9" height for 14 cu. ft. mixer. Bucket holds full batch, is powered by mixer engine, dumps automatically at top of tower. Also available for 16-S, 11-S Dandie® Concrete Mixers. Get more information from your Kwik-Mix distributor today.

KWIK-MIX
Port Washington, Wisconsin



MULTIPLE-SPEED Parsons 250 Trenchliner®

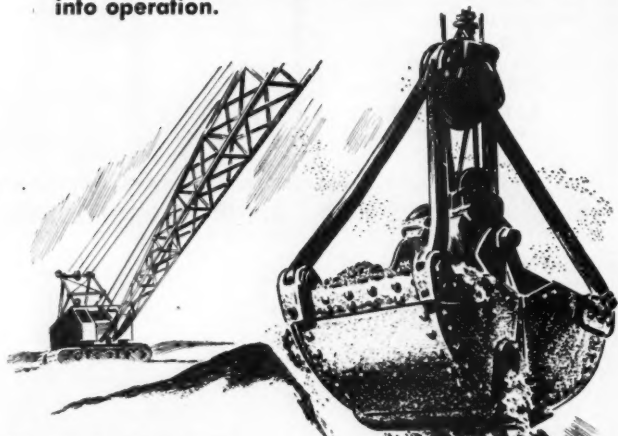
With 30 digging feeds, 3 bucket line and conveyor belt speeds all fully reversible, plus 3 travel speeds, this Parsons 250 Trenchliner is extremely flexible . . . digs 16 to 42" wide, up to 12'-6" deep . . . cuts within 11" of either side. Power-shift, arc-type conveyor dumps right or left. Get complete facts on this general-purpose 250 Trenchliner, or 4 other heavy-duty sizes, from your Parsons distributor, or write us today.

PARSONS
Newton, Iowa



LEADER IN CHOICE!

J-M INDUSTRIAL FRICTION MATERIALS are specified by leading manufacturers of heavy-duty earth-moving machines—who build equipment to take punishment from the time it goes into operation.



LEADER IN SERVICE!

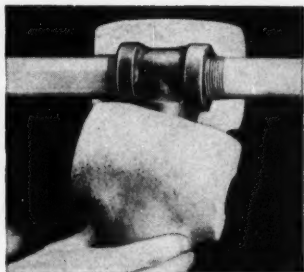
Operators of heavy-duty shovels, hoists, cranes—get maximum performance with low-cost operation and maintenance when they use

J-M INDUSTRIAL FRICTION MATERIALS

Wherever you see earth-moving machines lifting or hauling tons of dirt, odds are that they're using Johns-Manville Friction Materials. Designed for faster speeds, heavier loads, greater shocks, and higher operating temperatures, J-M clutch and brake materials have established many records for endurance and low-cost operational maintenance. Write today for your copy of "Johns-Manville Industrial Friction Materials" for the whole story. Address: Johns-Manville, Box 290, New York 16, N. Y.

Johns-Manville
INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers



FITTING INSULATION — Molded insulation fits around ells, tees, and 45-deg pipe connections. Birpac insulation combines easy application, neat appearance, and low thermal conductivity. It is molded from Fiberglas, and is available for all standard pipe sizes from ½ to 8 in. Installation is accomplished by placing the two halves over the fitting and then stapling, wiring, or taping them together. — Birma Products Corp., 2665 Main St., Buffalo 14, N. Y.

RUBBER-LINED VALVE — Heavy-duty rubber-seated cast-iron valve (No. 763) has been developed for emergency gas or liquid shut-off service. Valve is completely cycled and operated by a direct-connected motor-driven pump. Hydraulic pressure raises counterweight for open position. When valve is fully open, operating motor is cut off by integral switch. Valve action can be reversed. Available in sizes from 2 to 72 in. — R-S Products Corp., 4600 Germantown Ave., Philadelphia 44, Pa.



SWITCH-MAINTENANCE JACK — Single-acting track jack is designed to simplify maintenance work on switches and spurs, and temporary tracks used on construction projects. It has a low minimum toe height of 1½ in. This permits placing jack under rails without removing ballast. The 2½x3¼-in. forged toe stabilizes the load. Trip can be operated from either right or left side, with the operator protected by an improved safety thumb guard. Overall height of the 16A is 12 in.; lift is 6 in.; weight is 45 lb; and capacity is 15 tons. — Templeton, Kenly & Co., 1008 S. Central Ave., Chicago 44, Ill.

Have you tried PUMPCRETE® on your B-V-D's?

Rex Pumpcrete has proved the lowest cost concrete placement method on hundreds of bridges, viaducts and dams. For Example:

***BRIDGES** Pouring bridge piers in mid-stream is a fine example of cost-cutting Pumpcrete use. Pipe line is run out and into the piers. No heavy road needed to support trucks. No danger of preparatory structures being "washed out."

When one pier is completed, pipe is merely extended to the next one. It is also used to pour bridge deck.

***VIADUCTS**—Pumpcrete is usually ideal for viaduct work because it can handle the job without disrupting traffic and can pump to a height of 120', eliminating need for towers. Here it delivers concrete to a viaduct pier from location on the opposite side of a rail yard. Pipe is laid in a shallow trench under the tracks.

***DAMS** Time after time Pumpcrete proves to be the most economical method for pouring dams and spillways. Preparatory costs are held to a minimum, and a steady, large volume flow of concrete is assured. On this job a single pipe line and light cableway handled all concreting for a 500-foot spillway and multiple arch bridge above.



PUMPCRETE

REDUCES DIRECT LABOR COST

Concrete is transported, elevated and placed in one operation. No bugging needed.

PUMPCRETE

REDUCES PREPARATORY COSTS

Pumpcrete and pipe line flexibility eliminate need for many access structures in road building and maintenance... trestling and scaffolding, etc.

PUMPCRETE

REDUCES "DEAD TIME"

Pumpcrete delivers concrete steadily... promotes smooth, steady job progress with no interference between various crews.

PUMPCRETE

REDUCES NON-PRODUCTIVE MOVING TIME

No need to move mixing equipment from place to place. Pipe line placement permits spotting of Pumpcrete in the one best location for concrete placement.

Ask your local Rex Distributor to give you the details of the many advantages of concrete by pipe line. Or, if you prefer, write to Chain Belt Company, 1664 W. Bruce Street, Milwaukee 4, Wis.



CONSTRUCTION MACHINERY...



MEETS *all* OPERATING CONDITIONS

Not only does the CP-59 Sinker outperform any other drill in the 55-pound class, but it can be used for (1) plain dry, (2) blower dry, (3) plain wet, or (4) air-water operation.

This is made possible by its 4-in-1 backhead, which permits quick, inexpensive change-overs from one type of operation to another.

Its remarkably high drilling speed, exceptionally strong rotation, unsurpassed hole cleaning, excellent

riding qualities—all make for fast, efficient, economical performance.

Maintenance is low because of such features as a replaceable bronze chuck rotation nut to protect piston splines from scoring, and a replaceable bronze bushing liner to make it easy to maintain piston alignment and full cushioning.

Get in touch with your nearest CP office for a demonstration of the CP-59, or write for a copy of SP-3009.



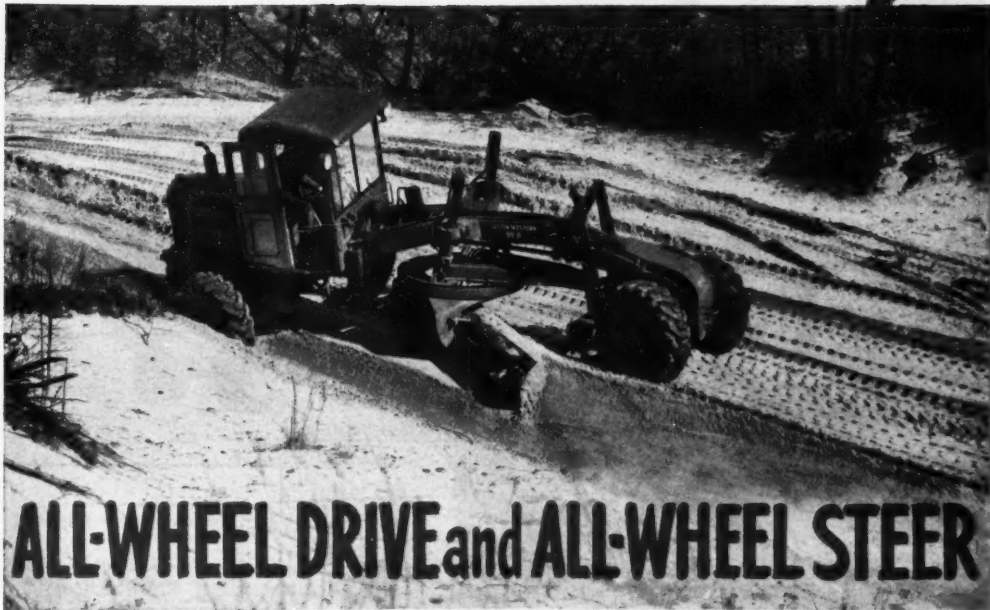
**CHICAGO PNEUMATIC
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Like "scotch and soda" —

they Go Together



ALL-WHEEL DRIVE and ALL-WHEEL STEER

Front Drivers **PULL**



Rear Drivers **PUSH**

We call it **Controlled Traction**,
and it moves **More Material**,
Farther and Faster.

True — you cannot actually see All-Wheel Drive in action on the average job; but it is "in there pitching" every minute . . . providing increased traction . . . moving more material . . . holding the front end steady.

True — you can best see All-Wheel Steer in action when the grader is making a short turn look easy; but that's not the half of it. Watch the operator at work. See how he constantly — almost instinctively — steers the **REAR WHEELS** slightly to right or left, balancing the thrust of the angled blade.

Yes — All-Wheel Drive and Steer *Go Together* on every job . . . *Work Together* as a team, for maximum performance, in minimum time, at lowest cost.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

Subsidiary of Baldwin-Lima-Hamilton Corporation

BUILDERS OF BALDWIN ROAD MACHINERY
Austin Western
SINCE 1900



The Swing is to "US" Electric Plants



More and more fire departments are turning to "U.S." for dependable emergency power units. Portable and Stand-by plants. Write for complete information.

United States Motors Corp.
602 Nebraska St.
Dept. D
Oshkosh, Wis.

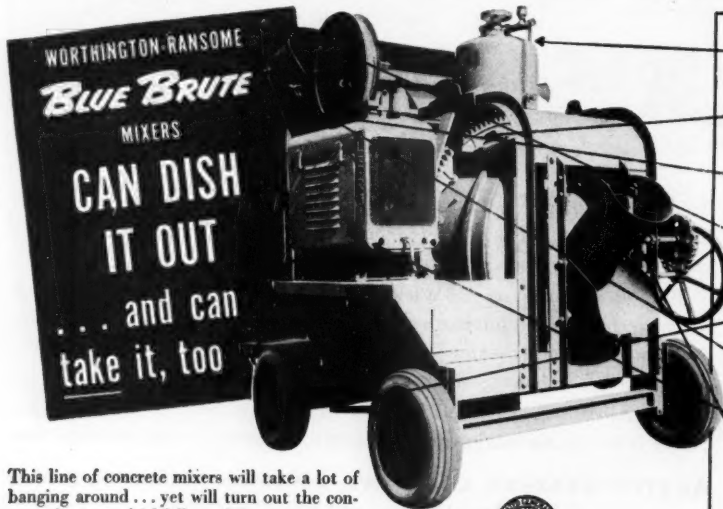
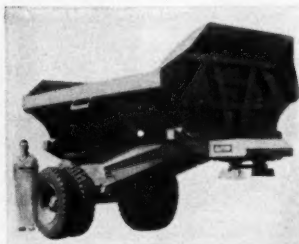



LIGHTWEIGHT CONVEYOR—Lightweight troughed-belt conveyor (Model 666) handles 75 yd of sand or gravel per hr. Standard equipment consists of a twin hydraulic boom hoist, underslung axle, slide trough, and a 14-in. 4-ply belt. Lengths from 14 to 25 ft are available as standard. —The Fairchild Engineering Co., Portable Div., Marion, Ohio.

VALVE ACTUATORS—These actuators are designed for operation of gate valves, plug valves, dampers, diaphragm valves, butterfly valves, and sluiced gates. They are Ledeen cylinders equipped with brackets, valves, controls, and couplings, and can be adapted to any make, size, or type valve. They can be arranged for on-and-off service or for positioning service. —Ledeen Mfg. Co., 1602 S. San Pedro St., Los Angeles 15, Calif.

THREE-PLY SYNTHETIC BOARD—Novoply board is made from small wood segments. This laminated paneling consists of a 1/16-in. surface of thin laminated wood sections, a core of medium size wood chips, and a back corresponding to the face. Wood segments are resin-coated and impregnated. While water-resistant, it is intended for interior use only. —United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

SIDE-DUMP TRAILERS—Pant-type side-dump trailers are available in capacities of 14, 17, and 20 tons. The TP models are doorless and may be dumped to either side. Body may be reversed to prevent excess wear on one side. Load distribution has been improved to place more load on the fifth wheel. The fifth wheel is permanently coupled. —Easton Car & Construction Co., Easton, Pa.



This line of concrete mixers will take a lot of banging around... yet will turn out the concrete for you—faithfully and fast.

The 16-S shown is built for the big jobs where you want your equipment portable. Look at those features. They add up to the fact that this mixer will *always* come back for more.

The 11-S, with two or four wheels, is also available. It is easily towed, easily turned.

See them all at your Worthington distributor. Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, New Jersey.

1. Water system—exclusive spiral cut-off syphon-type—no rubber to deteriorate.
2. One-piece semi-steel drum drive gear—machined inside to true circle.
3. Skip cable winding shaft mounted in self-aligning bearings—cable is self-equalizing.
4. Automatic clutch knock out and brake hold skip in discharge position when power loader is raised to top.
5. Skip vibrator speeds discharge—and it's self-cleaning.
6. Water-cooled engine. Radiator faces discharge side. Air-cooled also available.
7. Solid welded roller sub frame—no misalignment of rollers.
8. Two-piece discharge chute is out of way during mixing.



**BUY BLUE BRUTES
WORTHINGTON**



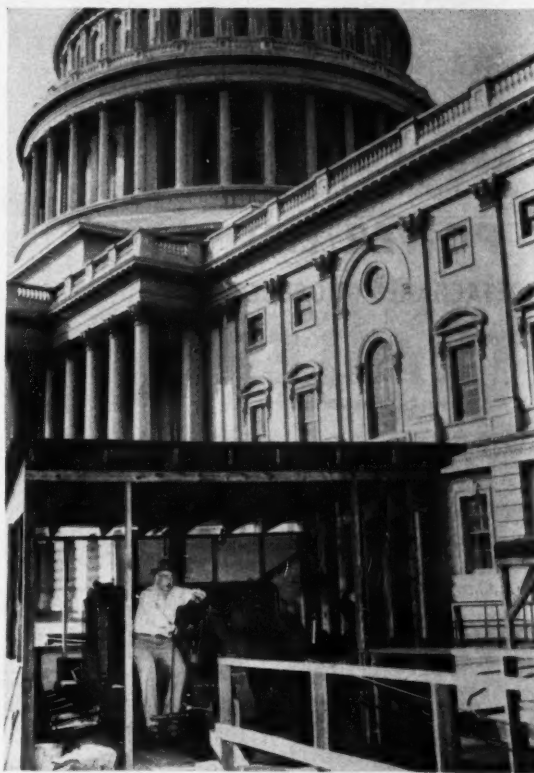
R.T.6

Fast job on Capitol Hill

When renovation of the U. S. Senate and House wings of the nation's Capitol was ordered, there were two main conditions attached to the job. First, it must be done with all possible speed. Second, it had to be thoroughly fine work.

Contractor on the job was Consolidated Engineering Company of Baltimore, Md. To insure swift, smooth hoisting of materials, they used two American Model 75 General Purpose Hoists, purchased from General Supply & Equipment Co., Inc. of Baltimore.

Operated by a father and son team—R. G. and C. M. Stevens—these rugged, dependable hoists have carried the work along without a single interruption for service or repairs. One more proof that the more important the job, the greater the need for American Hoists!



Modernize...economize...with
**American Hoist
& Derrick Company**
ST. PAUL 1, MINNESOTA

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**AMERICAN GENERAL
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Powered by Customers' Tractor-mounted Winch.

IN ONLY

5

"QUICK" MINUTES
IT'S

DETACHED, LOADED & RE-ATTACHED

Ready to GO!

ROGERS POWER LIFT, DETACHABLE GOOSENECK TRAILER

PATENTS PENDING

Frame is lowered to ground without need of blocking. Maximum height of 16" assures rapid, safe loading of equipment.

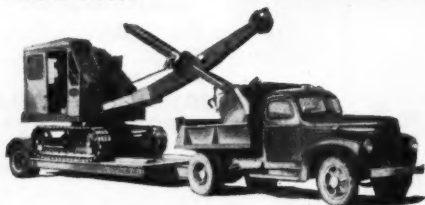
Complete Literature available upon request—Any Rogers Dealer will demonstrate its features right on your desk, with an OPERATING SCALE MODEL.

DEVELOPED BY

The Trailer Pioneers

ROGERS BROS. CORP.

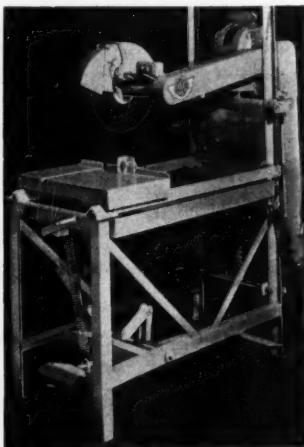
ALBION, PENNA.
220 Orchard Street



Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.



HIGH-PRESSURE PUMP — Multi-stage high-pressure centrifugal pump requires minimum floor space due to vertical construction. Fig. 6606 pumps are furnished in 2, 3, 4, and 5-stage construction with 1½-in. suction and 1-in. discharge openings. Pump and motor are built together as one unit. Motor has standard Type C mounting flange. Capacities range from 10 to 45 gpm against heads to 400 ft with 2, 3-, and 5-hp motors operating at 3,500 rpm.—The Deming Co., Salem, Ohio.



PORTABLE MASONRY SAW — Supremex Speed Kut masonry saw is available in both wet and dry-cutting types. The manufacturer states that it will cut any type or hardness of masonry materials. Handcrank automatically controls and fixes the self-locking wheel-positioning mechanism. Toe pedal feeds cutting wheel into work. Water storage and sediment drawer under the cutting table is easily removed for dumping. Metal guard over wheel directs water down to the work. The saw is powered by a 1½-hp motor.—Supreme Equipment Corp., 12415 Euclid Ave., Cleveland 6, Ohio.

Walks readily through loose backfill sand above newly-laid sewer.



There's plenty of traction and flotation to wade through mud too.

Four-Wheel Drive **PAYLOADER** *On Rubber Tires*

This big 1½ yd. Model HM PAYLOADER with its combination of large pneumatic tires and 4-wheel drive gives you fast-action traction on all kinds of footing — on sand, stone, snow, clay or mud. It gives you crawler-like traction at far less maintenance expense . . . speed when you want it . . . the ability to work on pavements. It travels over streets and highways without using a trailer.

This special tractor-shovel also provides easy operation and maneuvering speed through its power-boosted steering and full-reversing transmission. There are four speeds in reverse as well as forward. Double-acting hydraulic rams raise and lower the booms . . . dump and close the bucket . . . exert tons of down-pressure for tough digging conditions.

See a Model HM in action and you'll know why hundreds of contractors and road and street departments are enthusiastic owners and boosters. The Frank G. Hough Co., 706 Sunnyside Avenue, Libertyville, Illinois.



Literature on the big 1½ yd. Model HM and six smaller PAYLOADER sizes, down to 12 cu. ft. bucket capacity, is your's for the writing.



PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920





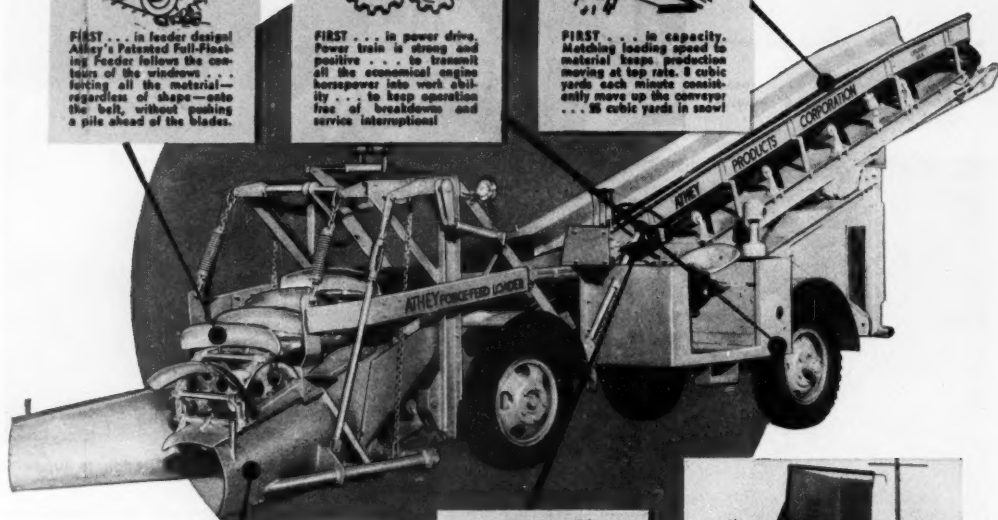
FIRST . . . in loader design
Athey's Patented Full-Flowing Feeder follows the contours of the windrow . . . forcing all the material—regardless of shape—onto the belt, without pushing a pile ahead of the blades.



FIRST . . . in power drive.
Power train is strong and positive . . . to transmit all the economical engine horsepower into work ability . . . to keep operation free of breakdowns and service interruptions!



FIRST . . . in capacity.
Matching loading speed to material keeps production moving at top rate. 8 cubic yards each minute consistently move up the conveyor . . . 25 cubic yards in snow!



FIRST . . . in gather operation. Moldboards reach out for the widest windrow. Forward motion forces material over plow-steel cutting edge onto conveyor . . . giving a clean, one-pass pickup!



FIRST . . . in overall design! Short wheelbase shortens turning radius, increases stability. One-lane width . . . keeps traffic on-the-move . . . low height clears all obstructions, yet reaches the largest truck.



FIRST . . . in versatility! Ability to do many jobs better . . . plus a full line of attachments and companion tools, makes Athey tops for any work. Combined with the Athey Portable Breaker, the Force-Feed Loader becomes a one-man crushing and resurfacing outfit for repairing worn roads, using material already on the road!

ATHEY FORCE-FEED LOADERS

FIRST

IN ALL THAT COUNTS!

The overwhelming preference for Athey Force-Feed Loaders, on all types of applications, is the result of superior Athey features . . . features that return big production, years of dependable service, and low-cost operation — *all the things that count!*

Visit your Athey—"Caterpillar" Dealer. Get full information on the Force-Feed Loader . . . its 34 applications . . . and the service that backs it.

**ATHEY PRODUCTS
CORPORATION**

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Athey

FORCE-FEED LOADERS



Here's the POWER you want on your job... plus DEPENDABILITY

Whether you're hauling dirt, spreading asphalt, or doing one of many other rugged jobs, you want a truck that fits the job—and provides plenty of low-cost power. Such a truck is a Dodge "Job-Rated" truck.

New Dodge "Job-Rated" trucks provide more power than before. On 2½-ton models, for instance, Dodge now offers a new 114 hp engine . . . the most powerful Dodge engine ever available in that field. And on high-tonnage models twin carburetion and exhaust system gives you plenty of extra power with extra economy.

And talk about maneuverability! Shorter turning diameters and new worm-and-roller steering gears on many models make the new Dodge "Job-Rated" trucks far easier to handle.

If it's dependability you're after, (and who isn't?) you'll go for features like the new Dodge moistureproof ignition and the new high-torque capacity starting motor. They help make starting easier in bad weather.

There's a Dodge "Job-Rated" truck to fit your need exactly. Get the proof from your nearby Dodge dealer today.

How Dodge Trucks are "Job-Rated" for the Construction Business

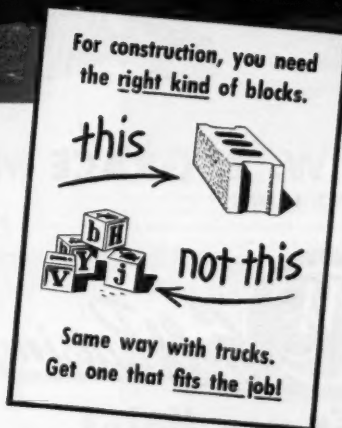
A Dodge "Job-Rated" truck is engineered at the factory to fit a specific job . . . save you money . . . last longer.

Every unit from engine to rear axle is "Job-Rated"—factory-engineered to haul a specific load over the roads you travel and at the speeds you require.

Every unit that SUPPORTS the load—frame, axles, springs, wheels, tires, and others—is engineered right to provide the strength and capacity needed.

Every unit that MOVES the load—engine, clutch, transmission, propeller shaft, rear axle, and others—is engineered right to meet a particular operating condition.

"Job-Rated" TRUCKS DO THE MOST FOR YOU



DODGE

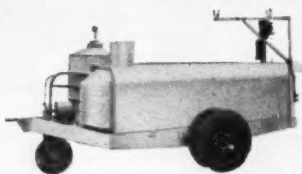
"Job-Rated"

TRUCKS

HOT ASPHALT WHEN YOU NEED IT

With The **RAPID FIRE**

Circulating heater for tank cars or storage. Positive circulation reduces coking and increases flue life



Model 43—Large Capacity for high production jobs. The small model 30 for jobs heating 10,000 gallons or less per day at 350°.

GRACE ROAD SWEEPERS

ENGINE DRIVEN
TRACTION DRIVEN
OR TRACTOR ATTACHED



ALL SWEEP Either LEFT OR RIGHT

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6100 SO. LAMAR

DALLAS, TEXAS

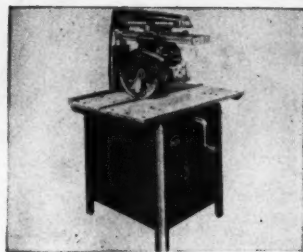


THE INDUSTRY'S MOST VERSATILE

- Picks itself up • Easily extends
- Lifting heights up to 94 feet
- Single or Double Drum Hoists
- Platform speed—100 ft. per min.
- Lifting capacity—2,500 lbs.

Optional Equipment: Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10' Extensions.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA



RADIAL-ARM SAW — Model 40-B saw has sufficient capacity to make cuts across the board at any angle from 0 to 90 deg, right and left—above the working table. Double 360-deg radial action permits adjusting saw to the lumber. The 40-B is available in three types—portable, with hand grips; mobile, mounted on rubber-tired trailer; and stationary, mounted on a cabinet-type base. All three are available in several sizes— $\frac{1}{2}$ to 5 hp, 1-phase ac; and $\frac{3}{4}$ to 7 $\frac{1}{2}$ hp, 3-phase ac.—Delta Power Tool Div., Rockwell Mfg. Co., 600 E. Vienna Ave., Milwaukee 1, Wis.

SEWER ROOT DESTROYER—Concentrated compound of crystals and fine powders is said to provide an effective answer to the problem of root removal from sewers and sanitary drain systems. Hercules R-D requires no digging, mixing, stirring, or other method of preparation, as it is applied directly into the sewer. The crystals are not dissipated by the sewage, and, when absorbed by the root, cause complete disintegration. Toxic action is confined to roots in the sewer and does not reach the plants themselves. Two pounds of R-D is sufficient for an average dose.—Hercules Chemical Co., 332 Canal St., New York, N. Y.



PERSONNEL CARRIER — Unit quickly converts any $\frac{1}{2}$ -ton truck into a handy carrier for transporting personnel. The unit slides into the back of the truck, and does not require bolts, screws, or other fasteners. It is made of tubular steel frame with plastic covered seats. Side and top curtains are made of mildew-proof and waterproof canvas. Top is reinforced with hardwood slats. Side curtains are equipped with heavy zippers and clear, plastic windows.—Dixie Tallyho, Inc., Fairburn, Ga.

THE ACTUAL IS LIMITED:

THE POSSIBLE IS IMMENSE

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1951

WELDED FRAMEWORK SAVES 36 TONS OF STEEL

By J. R. Braun, Vice President
Byrne Organization, Inc.
Engineers and Contractors
Washington, D. C.

WELDED design is cutting 5% from the labor costs of fabricating and erecting the 11-story Edgewater Apartments at Cleveland, Ohio. Simpler details of frame connections, made possible only with welded designs, are also helping to effect savings of 25% in weight of connections and a 3% reduction in total weight of this 1200 ton framework.

Each design detail utilizes the full economies of welded construction. Connections are so engineered as to allow fast, low cost shop fabrication and yet permit flat position field welding on every joint.

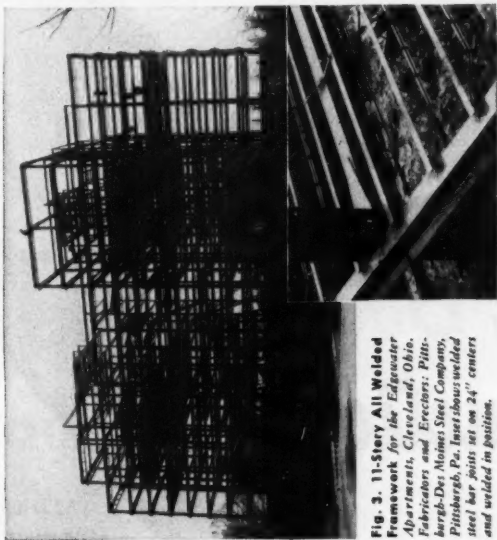


Fig. 3. 11-Story All Welded Framework for the Edgewater Apartments, Cleveland, Ohio. Fabricators and Erectors: Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa. Inset shows welded steel bar joints set on 24" centers and welded in position.

SIMPLER COLUMN SPLICES



Fig. 1. Typical Welded Splice of all columns: 12 to 12 and 12 to 14 WF column. Bearing plate is shop welded to lower column... clip angle for erection bolts is shop welded to upper column. All field welds are made in fast, easy downhand position.

FASTER BEAM-TO-COLUMN CONNECTIONS

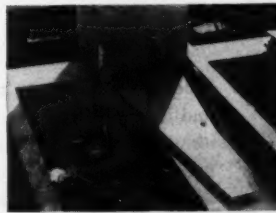


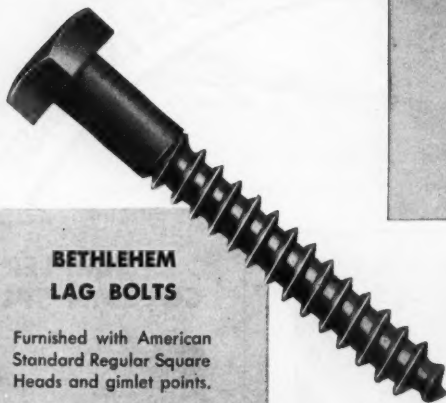
Fig. 2. Simpler Detail Speeds Erection. Clip angle is shop welded to column for bolting beam in the field. Outside cover plates are then field welded to top and bottom flanges and the top plate to column in flat position with Lincoln "Eletweld 5" electrodes. Bottom plate is shop welded.

WELDED DESIGN SAVES 25% ON WEIGHT OF CONNECTIONS

SEE HOW WELDED DESIGN SPEEDS ERECTION OF MULTI-STORY BUILDING

Studies in Structural Arc Welding free on request. Designers and engineers write on your letterhead to Dept. 173,

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 1, OHIO



**BETHLEHEM
LAG BOLTS**

Furnished with American
Standard Regular Square
Heads and gimlet points.

**BETHLEHEM
CARRIAGE BOLTS**

Have square necks, and
either cut or rolled
threads. They come with
regular square nuts.



**BETHLEHEM
MACHINE BOLTS**

Made in the following
head styles: square, hex-
agon, button, counter-
sunk (round or square),
and tee. They are fur-
nished with cut or rolled
threads, and with milled
bodies, if desired.

Standard Bolts for Construction

Bethlehem turns out machine, carriage, and lag bolts in styles and sizes to meet virtually every construction requirement. Bethlehem's standard bolts have straight shanks, smooth-fitting threads, and heads which are easy to grip. They are furnished either plain or galvanized.

We also produce a full line of American Standard Regular or Heavy Nuts, both square and hexagonal.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation



OTHER **Bethlehem** CONSTRUCTION FASTENERS • TIE-RODS • SPIKES • RIVETS
TURNBUCKLES • CLEAVISES • SLEEVE NUTS • RIVET-BOLTS



YOU CAN TAKE IT WITH YOU

Any time you build a road just to transport sand, stone or other materials from quarry or dock to the job, you are making an unnecessary, expensive investment. Not only is it expensive—but once the job is done, you can't take it with you.

There's another kind of highway—a better kind of highway. It's a Hewitt-Robins belt conveyor system, like the one in the picture . . . the longest "roller coaster" in the world. Over seven hilly miles it stretches (here it parallels an old roadway) to move the 4,000,000 tons of limestone needed to build Arkansas' great Bull Shoals dam.

There are many advantages in belt conveyors like these, especially

in rough country. There are no roads to build and maintain. No tracks to be laid. Grades can be mastered. Rivers, roads and valleys can be bridged. And when tunnels are inevitable, you provide a passage, not a highway.

Best of all, when the job is completed, you can—and do—take it with you!

Hewitt-Robins builds belt conveyor systems for moving bulk materials of every kind, above and below ground. They range from standard sectional conveyors for average and above-average needs, to multi-mile installations like Bull Shoals.

Hewitt-Robins is the only organization equipped to handle the entire

job . . . engineering, conveyor machinery and belting—to take single, unified responsibility for a successful Belt Conveyor installation.

It will pay you to consider belt transportation on your next job. Let us go over facts and figures with you. Inquiries will receive prompt, experienced attention. Write Robins Conveyors Division, Passaic, N. J.

HEWITT-ROBINS

BELT CONVEYORS

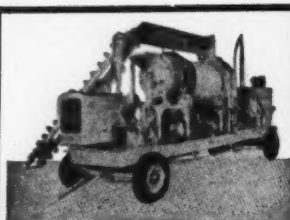
Hewitt-Robins is participating in the management and financing of Kentucky Synthetic Rubber Corporation

HEWITT-ROBINS



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ASPHALT PLANTS

Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.

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Gasoline Engine and
Electric Motor Driven Models

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for Asphalt and Tar

AGGREGATE DRYERS
for Stone and Sand

FRONT END LOADERS
for Industrial Tractors

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ELKHART INDIANA



By the use of

**ATLAS
SPEED
FORMS**

"We have been able to effect substantial savings in the time . . . to set up . . . and . . . tear down, which means untold savings in money."

HOWARD C. GRUBB,
Building Contractor
Tulsa, Oklahoma

IRVINGTON FORM & TANK CORP.
Irvington 38, N. Y.

Send more information. I am interested in forms for.

Name _____
Firm _____
Address _____



PAN-FEEDER LUBRICATOR—Two new lubricating systems are available for Pioneer-Oro heavy-duty manganese-steel pan feeders. Both systems employ tubing to all bearings for distribution of the lubricant. In one system, tubing is brought out to one side of the feeder,

and each bearing is individually lubricated through Alemite fittings. In the other system, tubing is brought out to one side, and all tubes terminate in a central system, whereby all bearings are lubricated simultaneously from a pressure tank.—**Pioneer Engineering Works, Inc.,** 1515 Central Ave., Minneapolis 13, Minn.

SCAFFOLD END FRAME—Safety, versatility, and low price are features claimed for a new-type end frame for light tubular-steel scaffolding. These frames are 36 in. wide by 6 ft high, and are interchangeable

STANDARD STEEL "S-J" for PATCHING SPEED



PERFORMS EVERY MAINTENANCE FUNCTION...
**SPRAY SHOULDERS • RELOCATE CURVES • PATCH CHUCK
HOLES • SEAL COAT and SECONDARY CONSTRUCTION WORK**

Powered by either 7.2 h.p. or 15 h.p. engine, equipped with a 100 GPM Pump, this Model "S-J" will handle any type of material with equal efficiency—uniformly applying material from end to end of spray bar up to 10-foot length. Two powerful burners supply intense heat through 5-inch heat flues—and fast heating is assured. Dual lever controls all operations. A curb side gravity draw-off permits easy crack-filling and sealing.

Mayor Ray E. Otten, Versailles, Mo., says: "We're doing some fine work with this machine . . ." It's a money-saver on any type job that can be handled with this fast working equipment.

WRITE FOR CATALOG "S-J"

OTHER PRODUCTS

Asphalt Pressure Distributors,
Tar Kettles, Patch Rollers, Supply
Tanks, Tact Heaters, Asphalt
Tools, Street Flushers, Construction
Brooms.



Standard Steel Works NORTH KANSAS CITY, MO.

able. One frame is ladder-type—for use at ends of scaffolding installation in eliminating need for other ladders. The other is open-type to permit passage of workmen wheeling materials. Frames are combined into towers by attaching diagonal braces. Bil-Jax brace lock permits attachment or removal of braces without removing wing nuts.—**Bil-Jax, Inc., Archbold, Ohio.**

VIBRATORS FOR BINS—Type Fair vibrators are designed to speed the flow of sand, gravel, cement, cinders, and other materials from bins, hoppers, chutes, and batch mixers. Vibrator is mounted on the skin of the hopper or bin, and strikes directly against it. The Type VG is designed for dams, culverts, and large precast slabs using wood forms. The Type LSRR handles the unloading of shipments of cement from railroad cars.—**The Cleveland Vibrator Co., 2809 Clinton Ave., Cleveland 13, Ohio.**

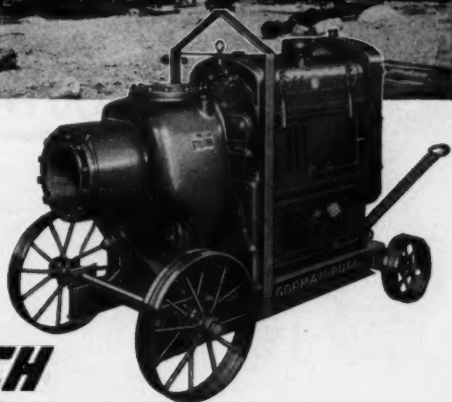


HOE-TYPE MIXER—Available with either gasoline or electric power, the 3-ft Hoe-Boy mixer is designed primarily for inside work right at the point of application. Features include: Triple hoe action; adjustable triple-blade mixing hoes; safety grating and bag splitter; self-aligning self-lubricating shaft bearings; heavy-duty electric-welded frame; machine-cut sprockets; and roller-chain drive. The Hoe-Boy is 29 in. wide and has a 36½-in. charging height and a 15-in. discharge.—**Construction Machinery Co., Glenwood & Vinton, Waterloo, Iowa.**

RADIANT, ACOUSTICAL CEILING—New ceiling combines radiant heating with acoustical construction. Perforated aluminum tile-like panels comprise the ceiling surface. They are in mechanical contact with a grid work of hot-water pipes and radiate heat into the room. The perforations admit sound into the ceiling where it is absorbed by a blanket of acoustic-insulating material. An acoustic-thermal blanket is installed wall-to-wall over the heating coil. This ceiling can also be used to provide summer air conditioning.—**Burgess-Manning Co., Libertyville, Ill.**



When Rye Lake in Westchester County, N. Y. receded, cutting off three villages from water supply, the crisis was met by putting dependable Gorman-Rupp pumps to work.



10 INCH PUMP FOR THE BIG JOBS

At a total head of 15 feet this pump will deliver 4150 gallons of water per minute—more than 15 tons of water a minute. This means a torrent of 249,000 gallons per hour.

This great 10 inch self-priming centrifugal is **The Pump for the Big Jobs**—in construction, open ditch irrigation, water supply and industrial applications.

Wherever there is a large volume of water to handle call on the Gorman-Rupp "Big Boy" the 240-M, 10 inch pump.

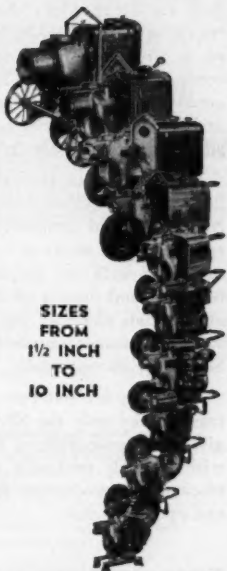
GASOLINE ENGINE DRIVEN

Model 31001, 240M, 10 in. 65 H.P. Length 136" (incl. tongue), width 50", height 65". Net wgt. 2870 lbs. Applicable engines include Hercules Model JXD, and Chrysler Model IND-12.

DIESEL ENGINE DRIVEN

Same as model 31001. Pump performance follows variance of H.P. available on continuous duty operation of different engines. Applicable units include Detroit Diesel 3031 and 3032, International UD-9 and Hercules DOOD.

Write for full information and ask for Bulletin No. 8-CP-11.



SIZES
FROM
1½ INCH
TO
10 INCH

THE  **GORMAN-RUPP COMPANY**
MANSFIELD, OHIO



That's what a contractor said to one of the SEAMAN field engineers while they were watching the SEAMAN MIXER at work on a bituminous highway job. And the contractor was right! Because the SEAMAN aerates as it mixes. Solvents rapidly evaporate and the "set" is greatly hastened. That's an advantage found only in the SEAMAN.

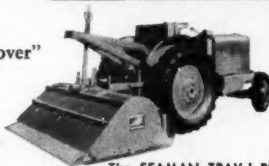
But more than that the SEAMAN is a "full-depth" MIXER. It mixes thoroughly, completely and positively to the full depth specified. The secret of full-depth mixture of binder with the proper distribution of coarse and fines is in the forward "spillover" of materials ahead of the mixing rotor and the constant re-mixing as the SEAMAN moves ahead.

And these are but two of many reasons why only the SEAMAN method gives the roadbuilder a *complete* mix together with a highly profitable versatility and efficiency in production for far less investment and operating cost.

The new, 1951 edition of "Soil Stabilization Methods" is off the press. Completely revised and enlarged, 100 pages of pictures, diagrams and practical construction information. It's FREE. Just ask for Bulletin 25. Write today.



The SEAMAN Self-Propelled (left) is a complete mixing unit which offers full 360° operator visibility and accurate control of the mix. It also frees a critical tractor for other work.



The SEAMAN TRAV-L-PLANT (below) offers all the advantages of the Self-Propelled unit. It is equipped with tachometer assembly and a volumetric meter is available for the closely controlled application of bitumen. Water also is readily applied.

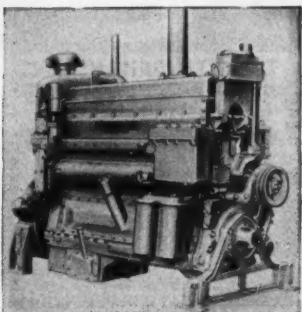


SEAMAN MOTORS, INC.

280 N. 25th Street, Milwaukee 3, Wis.



SELF-PROPELLED SAW—Saw for cutting concrete and asphalt is powered by a 13.3-hp gasoline engine. Cutting depth is determined by size of blade used. The self-propulsion feature is said to increase life of cutting blade and to speed sawing operations. Dash panel contains water-pressure gage, spindle-speed tachometer, motor throttle, cut-off switch, and transmission control lever. Lever-lock control enables operator to remove blade from cut, and then lower it to the same depth without changing adjusting screw.—Concrete Sawing Equipment Inc., 15 N. Oakland St., Pasadena 1, Calif.



INDUSTRIAL DIESELS—Two Caterpillar industrial diesel engines are scheduled for mid-year production. The 6-cyl D337 is an industrial version of the engine used as a power source for the DW20 and DW21 tractors. The D326 is similar in design, but will be offered with a lower horsepower range. Fuel system has the fuel pump mounted adjacent to the cylinder it serves, resulting in short fuel lines for each cylinder. Pistons are cooled by an oil stream sprayed from a nozzle solidly attached to the engine block. Since this spray lubricates the pin also, oil grooves are not required in the connecting rod. Fine-filtration elements that handle full flow of oil to the engine system are incorporated. Oil passageways are thus protected from dirt and foreign material while filter elements are being changed. Range of the D337 varies from 170 to 275 hp; of the D326, from 118 to 186 hp.—Caterpillar Tractor Co., Peoria 8, Ill.

CRANE ADAPTOR FOR BACKHOE—Crane adaptor fits a standard $\frac{3}{4}$ -yd Bantam backhoe using same boom and stick. Conversion takes about 5 min. Full circle swing is maintained. Capacity is 2½ tons without outriggers or counterweight on truck.—Schield Bantam Co., 221 Park St., Waverly, Iowa.

PLASTIC PIPE REDUCERS—Reducing bushings and end plugs for plastic pipe are made of injection-molded thermoplastic material. They feature a hexagonal ring for positive wrench grip to facilitate installation. Bushings are available in 15 sizes ranging from 2x1½ to ¾x½; pipe plugs, in six sizes ranging from 2 to

½ in. Bushings can be used to join plastic to plastic, or plastic lines with previously installed metallic systems. Because of the wide range of sizes, only one bushing is required to reduce any pipe diameter to any other standard size.—Carlson Products Corp., 10154 Meech Ave., Cleveland 5, Ohio.

REFUELING PUMP—Electrically powered Fill-Rite Model PM-622 pump features simplicity of construction. Powered by a ¼-hp motor, it delivers up to 12 gpm. Nozzle is a standard refueling type. Theft-protection feature is an interlocking nozzle and switch mechanism.—Ossian Engineering Co., Ossian, Ind.

TRY THESE HARD-FACING ALLOYS BY VICTOR

Made to stretch working life of cutting, drilling, and crushing equipment wherever abrasion, impact, corrosion and heat are encountered.

THEY ARE FASTER
AND SMOOTHER!



	FOR THESE CONDITIONS	FOR THESE EQUIPMENTS
VICTORALLOY	Abrasion and severe impact	Tractor rollers, dredge pump impellers, bucket lips and teeth, rock crushers, steel mill webblades
VICTORTUM	Severe abrasion	Spreader teeth, dredge cutter blades, marine shovels, oil field tools, diesel tools
VICTORITE	Severe abrasion or sliding friction	Fluestacks, cultivators, steel mill guides, rubber shoes, shaft bearings, rolling mill guides
VICTOR HS 1	Corrosion, heat and abrasion	Saw teeth, carbon scrapers, wire guides, roller arms
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VICTOR TUNGSTADIN	Thin cutting edges	Cast cutter bits, drill bits, rock mill liners, cone crushers

Available in a full range of sizes for both acetylene and electric AC and DC application. Try VICTOR hard-facing rods on your own job NOW. Save money two ways; (a) in time . . . application is faster and smoother; and (b) by stretching the life of equipment used under severe operating conditions. Order a supply from your dealer TODAY.

VICTOR EQUIPMENT COMPANY

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- ☐ Hard-facing alloys. ☐ Portable flame cutting machines.
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NEW!
CHROME-CLAD
MEZURALL
"10-FOOTER"
TAPE-RULE
No. C-9210



CHROME-CLAD BLADE
EASIER READING
LONGER WEARING
SELF-ADJUSTING HOOK
REPLACEABLE BLADES

With the new Mezurall "10-Footer" Tape-Rule you can save time and insure greater measuring accuracy on all types of shop work beyond the capacity of regular 6 or 8-foot Tape-Rules. Check all these features:

- Non-glare Chrome-Clad satin finish blade will not crack, chip, peel, or corrode.
- Durable Black Markings that stand out sharply against chrome white background.
- Self-Adjusting End Hook that permits accurate butt-end and hook-over measuring.
- Replaceable blades. Patented safety catch simplifies changing blades.
- Improved, Heavily Plated Case with inset side plates in attractive red and white.

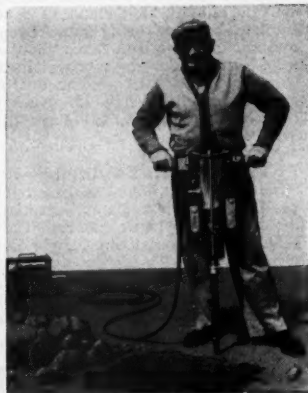
A "natural" for measuring large steel sheets, plywood, linoleum and for countless other important industrial uses.

Your Supply House has them . . . specify No. C-9210 10-ft. Chrome-Clad Mezurall. Also available with nickel plated blade, specify No. 9210.

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TAPES • RULES
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THE LUFKIN RULE CO., Saginaw, Mich.
132-138 Lafayette St., New York • Erie, Ont.

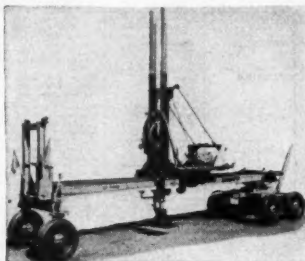


PORTABLE GASOLINE HAMMER

—Improved Barco hammers feature new ignition, greater portability, and increased operating convenience. The compact ignition coil-vibrator-condenser assembly is now located in the right hammer handle. Electric source is a 6-v battery. The hammer requires no auxiliary equipment for operation. The J-2 weighs 72 lb; the H-6B, weighs 89 lb. Both deliver up to 1,550 strokes per min. — Barco Mfg. Co., Dept. J-24, 1812E Winnemac Ave., Chicago 40, Ill.

PLASTIC FINISH FOR WOOD

—Phenolic-plastic finish for wood surfaces features wear and corrosion resistance. Platon contains no oil, and is said to retain a high gloss without waxing or scrubbing. It can be applied cold by brush, spray, or dip. Platon is available in pint, quart, and gallon sizes in gloss, semi-gloss, and flat finish.—Minnesota Platon Corp., Pipestone, Minn.



TAMPING MACHINE — Tamping machine has a 5,500-lb hammer that delivers up to 60 blows per min. It travels transversely with the ditch and will tamp a trench 15 ft wide and 15 ft deep. It can also tamp a canal bank where dirt has to be put on and tamped to a required density —main members carrying carriage and wheels can be elevated to an angle of 45 deg. Machine is automatic and can be set to deliver any blow desired.—R. P. B. Corp., 2751 E. 11th St., Los Angeles, 23, Calif.

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SHORTAGES!



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REDUCE CONCRETE
LABOR COSTS
UP TO 60%

with the

WORLD'S FOREMOST
"SHAKE-DOWN ARTIST"



The one-man Vibro-Plus Roll-gear Internal Vibrator will help you roll back rising labor costs and do a better job.

Available in electric, gas-engine or pneumatic-driven models delivering from 11,000 to 15,000 V.P.M. Exclusive patented features assure years of trouble-free operation.

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PRODUCTS, INC.

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SAVED

\$12.50 to \$25.00
an hour!



Laying a half-inch top course of hot mix.



Rear wheels down and the machine is off to start the parallel course.

YOUR Adnun

Retractable Wheels cut the cost of your short hauls.

Supposing you have been working a week down one side of a job and want to get back to start the parallel course—it takes just a few minutes time to let down your Adnun Retractable Wheels and hoist the Adnun up to the tail gate of your truck. You are back at the beginning and ready to start on the new course before you could load the ordinary black top spreader on a trailer!

You don't even have to have a truck! The Adnun on its wheels will travel back to the beginning of the average job on its own power before you could load and unload other equipment from a trailer.

The Adnun cuts truck and trailer rental, saving you costs up to \$12.50 to \$25.00 an hour and it saves time in loading and unloading.

Add to this feature Adnun versatility of spreading aggregates, Adnun ability to lay a tighter joint for safer roads, lower upkeep costs, freedom from rebuilding and other features that reduce construction costs and increase output. Ask for the booklets, "11 Basic Things..." and "Roads That Last". They bring out some new thoughts on asphalt paving equipment.

THE FOOTE COMPANY, INC.

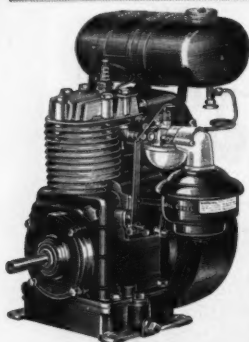
Subsidiary of Blaw-Knox Co.
1910 State Street • Nunda, New York

ADNUN

TRADE MARK REGISTERED

BLACK TOP PAVER





MODEL K-12-2, 3 H. P., 4-cycle, single cylinder, air-cooled. Length 14", width 14", height 19". Weight 43 lbs.

RELIABLE POWER FOR:

Concrete Mixers • Road Oilers • Compressors
Floor Sweepers • Generators • Hoists
Lift Trucks • Centrifugal Pumps
Portable Saws
Snow Removal Equipment
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KOHLER ENGINES

Four-Cycle, Air-Cooled

Kohler Engines are engineered and built to give the economical service that has won world-wide acceptance for Kohler Electric Plants in construction and other industries. Made in several sizes, they are suited to a wide range of uses. Kohler engineers will gladly assist in working out applications for your particular requirements. Write for information.

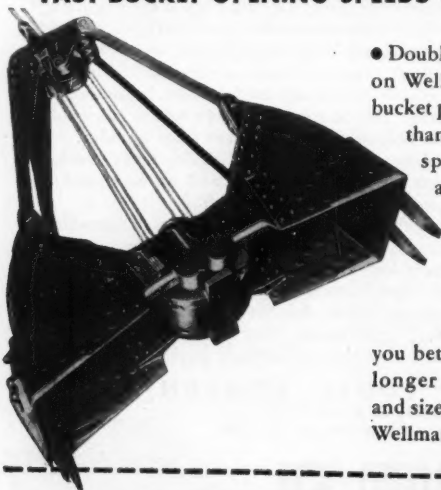
Kohler Co., Kohler, Wisconsin. Established 1873.

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AIR-COOLED ENGINES • PRECISION PARTS

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS



• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

Want Facts?

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BUCKETS • STONE AND WOOD GRABS

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7000 Central Avenue
Cleveland 4, Ohio



IMPROVED TOURNAADOZER—The Super C Tournadozer is now available with torque converter and electric control. It has a single-stage converter that acts as an automatic hydraulic transmission, combining advantages of a hydraulic torque converter and a hydraulic coupling. Gears in the constant-mesh air-actuated Tournamatic transmission are controlled by electro-magnetic valves controlled by four switches on the dash panel. Electrically controlled steering is accomplished by toggle switch mounted on the control panel.
—R. G. LeTourneau, Inc., Peoria, Ill.

NON-SEIZE THREAD COMPOUND

—Metallic compound combines advantages of a lubricant and sealer to prevent seizure of pipe, bolt, and stud threads and gasket faces. Led-Plate is said to be effective in a temperature range from minus 350 F to plus 2,900 F. The compound can be used for steam, gas, water, air, oil, ammonia, and various chemical connections.—Armite Laboratories, 6620 Broad St., Los Angeles 1, Calif.



HIGH-VACUUM HAND PUMPS—Pump in three new models can be installed in 1½- and 2-in. bungs of drums and tanks. It can be used for dispensing oils, water, turpentine, and other similar liquids. The 970 has a non-drip discharge spout, and a baffle or dam in the spout to permit expansion, while preventing leakage. The 971 has an 8-ft static wire hose and UL-recommended vacuum breaker. The 972 is equipped the same as the 971, but also has an 8-gal flow meter.—Tokheim Oil Tank & Pump Co., Fort Wayne, Ind.

NOW! BARCO

Gasoline Hammer

**—with new ignition,
new handle design**

- **ONE MAN OPERATION!**
- **NO OTHER AUXILIARY EQUIPMENT NEEDED!**

*More Portable!
Greatly Improved Operation!*

NEW IGNITION! Here are the quick facts:

- (1) Special sealed coil, vibrator, and condenser all now housed in handle—easily replaceable as a unit,
- (2) Short (5") high tension lead, (3) Continuous vibrating type vibrator not dependent on timer point contact, (4) Faster initial spark, (5) Quick, easy starting under all weather conditions!

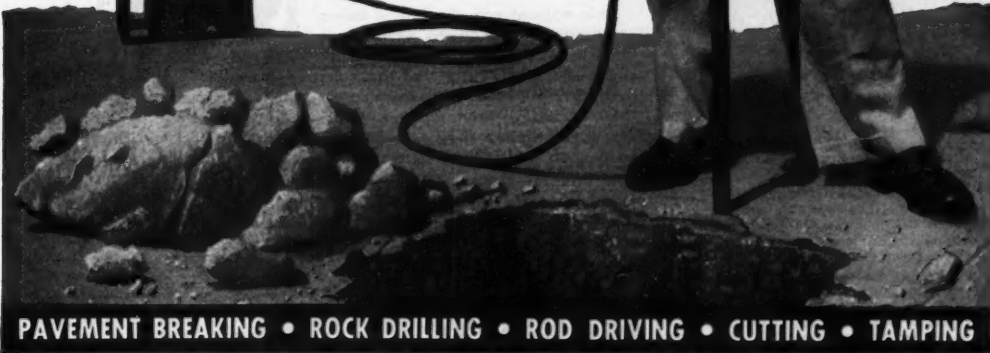
MORE PORTABLE THAN EVER! Less total unit weight. New quick disconnect for cable at handle. Coil box eliminated and lighter cable to battery. Easy to take hammer to any location by truck, car, or air!

INCREASED OPERATING CONVENIENCE!

New simplified arrangement of parts. Ignition switch placed beside operator's thumb.

ASK FOR A DEMONSTRATION! Your nearby Barco distributor will be glad to give you a demonstration. Ask about conversion kits for incorporating these latest advanced features into your present Barco hammers. **BARCO MANUFACTURING CO.**, 1812 G Winnemac Ave., Chicago 40, Ill. In Canada: The Holden Co.

IMPROVED MODELS AVAILABLE NOW:
Standard Model J-2. Weight, 72 lbs. Up to 1550 strokes per min.
Heavy Duty Model H-68. Weight, 89 lbs. Up to 1550 strokes per min.



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FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

1500 BBs



●These 1500 BBs... one thousand five hundred individual units... represent the difference between WACO Sectional Scaffolding and ordinary scaffolding. For example, on a project using 250 end frames you have 1500 *Fewer* parts with WACO. And that's important to you because it means 1500 *Fewer* parts to handle... or to lose and replace at the expense of your time and money.



HERE'S A FACTUAL ANALYSIS
WACO Requires . 750 Parts
Scaffolding No. 1 . 1250 Parts
Scaffolding No. 2 . 2250 Parts

The *initial cost* of any scaffolding is very much the same. But the *service and the economy in the using* are radically different. That's why more and more contractors now use WACO. Peter Kiewit Sons' Co., Omaha, Neb. The Rust Engineering Co., Pittsburgh, Pa. Johnson, Drake & Piper, Inc., Minneapolis, Minn. Jas. McHugh Construction Co., Chicago, Ill.



SECTIONAL SCAFFOLDING



The photograph shows the WACO Speedlock—a patented WACO feature—that eliminates wing nuts and threaded bolts. WACO is the simplest, safest and fastest scaffolding assembly made. Its modern design means 1500 *fewer* parts to transport, to handle, or to lose. Get all the facts. Write today for prices and complete information.

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Xerography duplicating method provides copies of drawings, letters, charts, or reports in less than 1 min. It is a dry, direct-positive electrostatic reproduction process that requires no water, chemicals, film, or

sensitized materials. The complete XeroX outfit of three units fits on a 3x5-ft table. Each unit plugs into a standard ac outlet. In Xerography, there is no need for darkroom or special plumbing.—**The Haloid Co., Haloid St., Rochester 3, N. Y.**

CONCRETE-FLOOR RESURFACER

—Improved Armor resurfacing and patching material for concrete floors features a new-type aggregate. Armor is a dry cementitious type powder made up of pulverized pure-oxidizing metal grains and four different kinds of aggregate, chemicals, and puzzolanic ingredients. The new aggregate has an approximate sum of 98% in oxide basilian, iron, and aluminum.—**The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio.**

THE JOB MUST GO ON!



MARLOW pumps help Bechtel Corporation cross difficult swamplands

This natural gas pipeline is being constructed between the Texas Gulf Coast and Joliet, Illinois, across all kinds of terrain. At one of the worst spots — this swampy stretch at Newport, Arkansas — the contractor had to put weights on the pipe to sink it below the mud. And under conditions as tough as they come, the Marlow pump shown, a Model 641 Self-Priming Centrifugal, stays on the job and helps construction move ahead smoothly.

This job furnishes another example of Marlow stamina and dependability. **REMEMBER!** Marlow pumps have been helping contractors solve difficult pumping problems for over a quarter of a century. Let Marlow pumps help you cut costs and safeguard your profits.

Write for information and name of nearest dealer

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RIDGECREEK, N. J.
Manufacturers of the World's Most Complete Line of Construction Pumps

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

ROPE AND CHAIN FITTINGS—

Revised and enlarged data book combines engineering information with an extensive catalog of a complete line of wire rope and chain fittings. In addition to presenting detailed working characteristics of each product to aid in selection of the proper fitting, Catalog 150 features tables and charts that make it a valuable reference book.—**The Thomas Laughlin Co., Portland 6, Maine.**

BITUMINOUS DISTRIBUTOR—

Two catalogs by Bros describe the Bituminizer for distributing and spraying bituminous materials and the new Spraymatic bar. Features listed in the Bituminizer catalog include: V-bottom rectangular tank, diamond-shaped flue, gear-type pump, material-handling system, side-mounted power unit, and one-man cab control. All specifications are listed in detail. The Spraymatic catalog features a description of how this bar is designed to save material and time and to provide high-quality bituminous roads. Sketches and text are used to explain its principal features of operation and construction.—**Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave., S. E., Minneapolis 1, Minn.**

MASONRY-SAW BLADES—

Titled "How to Cut Blade Costs in Masonry Cutting," this data book contains complete information on use and care of masonry-saw blades. It tells how to determine cutting costs and the proper blade for various materials; how to run cutting-cost tests; how masonry blades are made and how they cut; the various types of cuts; and contains many helpful hints on the proper use of blades.—**Eveready Brik saw Co., 1507 S. Michigan Blvd., Chicago 5, Ill.**

CONCRETE MIXER—Bulletin illustrates and describes recent improvements on the 16-S Dandie 3-bag mixer. Features of the mixer include all-welded heavy-duty frame construction, coil-spring mounting to balance the mixer, and cast-steel drum heads with machined roller paths. Schematic drawings listing detailed dimensions are included, as are specifications for the extension track and tower loader attachments.—**Kwik-Mix Co., Koehring Co. Subs., Port Washington, Wis.**

"SUBWAY"® AIR HOSE is made to provide highest resistance to all service hazards encountered in the roughest drilling operations. Perfectly balanced construction assures equally long life for tube, carcass and cover, with each part contributing to the outstanding strength, toughness and durability for which this hose is famous. Despite its exceptionally husky build, it is light in weight, flexible, easy to handle.

A Goodall "Standard of Quality" product, in sizes ½" to 1¼", and maximum lengths of 50 feet. Wrapped duck construction.

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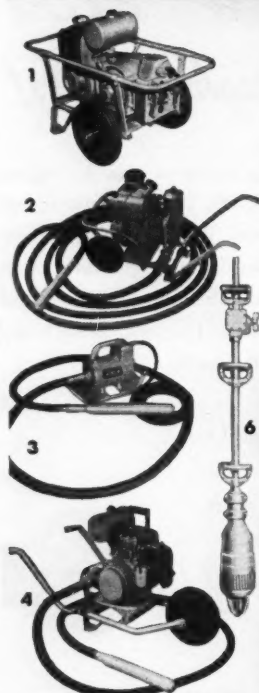
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Specified densities are quickly reached in granular soils with the Jackson Vibratory Soil Compactor. For those areas adjacent to structures, bridges, culverts, in trenches, factory floors and earth fill dam construction, there is nothing that begins to equal the Jackson Compactor for speed, convenience, and thoroughness of compaction. Self-propelling, the operator merely guides it. Send us a sieve analysis or small sample of the soil, and we will tell you what you can expect in percentage of A.S.S.H.O. densities and depth of compaction.

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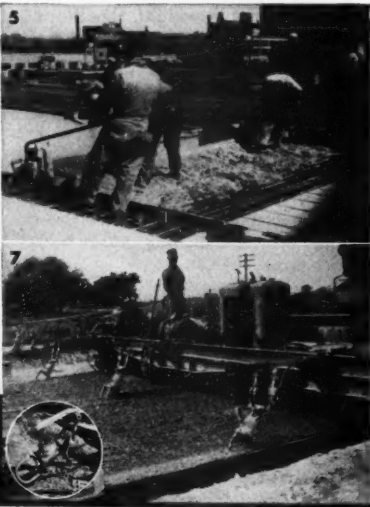
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1. Power Plant used with Compactor and Screed, 1.25 KVA. Others of 2.5 and 5 KVA capacity — all produce both single and 3-phase 110 V. 60 cycle AC and have generators requiring no maintenance or adjustment.
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4. Finest of engine-driven flexible-shaft vibrators.
5. Electric Vibratory Screed — most productive of all screeds for municipal paving, highway widening, etc.
6. Heavy-duty Vibrator — a "must" on mass construction.
7. Sideform Vibrator — mounts on finisher, saves better part of two men's labor. Write for "Pocket Guide" describing the entire line.

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HYSTER CATALOGS — Bulletin 1170 contains 16 pp. of information on the Hystaway excavator-crane. This tractor-mounted machine can be used as a shovel, dragline, crane, backhoe, or clamshell. Bulletin 1438 describes the Hyster Grid Roller for bituminous road salvage. A third catalog, now available, describes the Model MHS straddle truck for handling long structural members. — **Hyster Co., 2921 N. E. Clackamas St., Portland 8, Ore.**

RUBBER CONSERVATION — Complete plan for obtaining maximum life from industrial rubber products has been evolved by Quaker. Details are contained in: A conservation manual listing suggestions on care and maintenance of rubber products; a wall chart that lists and explains vital necessary steps in conserving belting, hose, and packings; and maintenance memos to be distributed periodically. — **Quaker Rubber Corp., Div. H. K. Porter Co., Inc., Tacony & Comly, Philadelphia 24, Pa.**

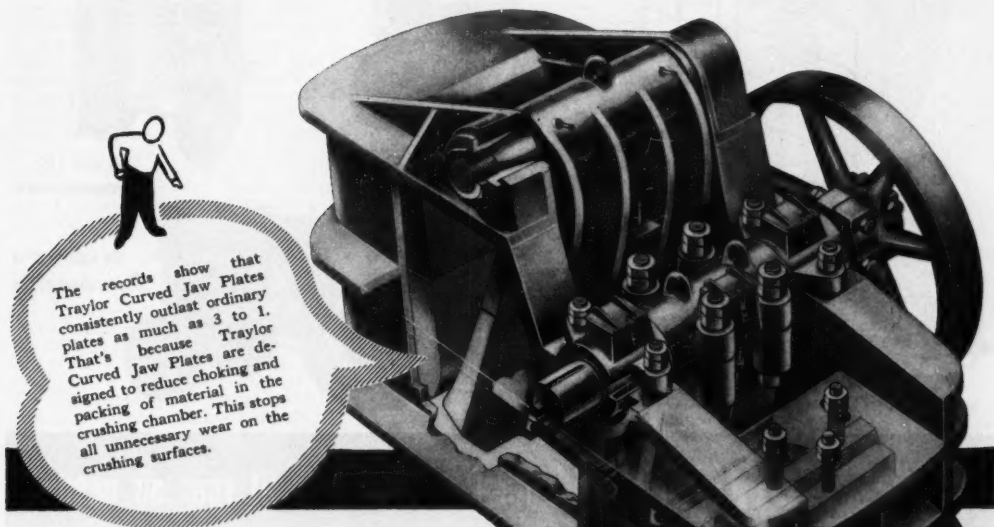
SUBDRAINAGE SYSTEMS — Folder entitled "How to Stop Excessive Maintenance at the Source" discusses subdrainage systems for streets and roads. It describes lightweight perforated pipe and how it is adapted to this type of service. Installation procedures are listed. — **Armco Drainage & Metal Products, Inc., Middletown, Ohio.**

BULLDOZERS — Sixteen-page booklet, Form 30157, explains features of Caterpillar dozers including the new 8U. Explains the advantages of the pitch adjustment, and describes tilt and angling adjustments, and other features of construction and operation. Specifications are listed for the complete Caterpillar line. Also described, are the cable or hydraulic power-control units. — **Caterpillar Tractor Co., Peoria 8, Ill.**

WELLPOINT SYSTEMS — Descriptive literature on wellpoint systems features a description and specifications on the Model 646 4-in. Hi-Capacity portable pump. Bulletin illustrates and describes component parts, listing the advantages claimed for the design of each. Typical wellpoint applications are described. — **Foundation Equipment Corp., 38th Ave. & 10th St., Long Island City 1, N. Y.**

HYDRAULIC CONTROLS — Bulletins published by Monarch describe a complete line of hydraulic controls including controls for attachments mounted on Willys Jeeps; the Hy-Lo-Jack control for snow plows, and truck and tractor equipment; the Dyna-Might electric power hydraulic controls; and the Hy-Lo-Jack hydraulic power unit. Separate bulletins are available for each of these items. — **Monarch Road Machinery Co., 322 CM N. Front Ave., Grand Rapids 4, Mich.**

Long Life of Curved Jaw Plates is a bigger reason than ever for buying a Traylor Jaw Crusher



The records show that Traylor Curved Jaw Plates consistently outlast ordinary plates as much as 3 to 1. That's because Traylor Curved Jaw Plates are designed to reduce choking and signing of material in the crushing chamber. This stops all unnecessary wear on the crushing surfaces.

IN ONE CRUSHER, *straight plates crushed only 96,000 tons of 4" to 5" product before wearing out. Curved plates in the same crusher, crushed 300,000 tons of 3" to 3½" product.*

Keep an eye on the future, when you buy stone crushing machinery today. To insure continuous production, your best bet is to buy equipment that will require a minimum of maintenance and repairs. It may not be easy to get replacement parts when you need them most. Buy a Traylor Jaw Crusher . . . a crusher that has proved its ability to stay on the job 3 times longer between jaw plate replacements. Mail coupon for bulletin on the Traylor H Jaw Crusher today.

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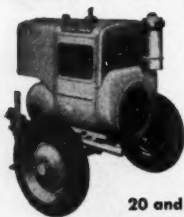
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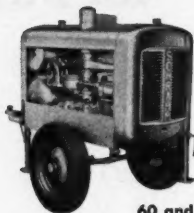
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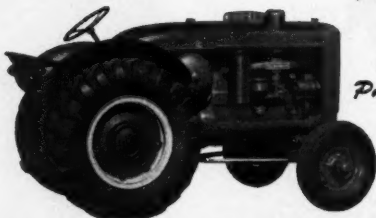
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There's a **SCHRAMM** Air Compressor to fit your air needs!

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MODELS 60 and 105 *Pneumapower*... For jobs where large compressors are not required; Riveting, Tamping, Waterproofing, and Insulating.

MODELS 60 and 105... *Pneumatractor* Self-Propelled. For Trench Work, Loading and all air applications.

MODEL 105 *Unistage*... Equipped with large size tool boxes capable of hauling complete assortment of construction tools.

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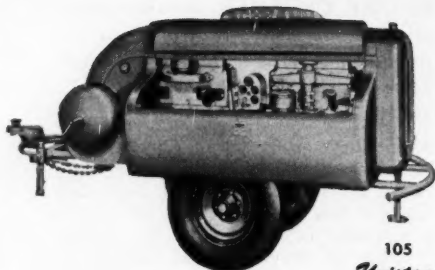
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PROTECTIVE COATINGS—Neolac 600 high-gloss resin enamel with high weatherability for wood, metal, and concrete is described in Bulletin 239. Features of this enamel, its chemical composition and physical properties, and methods of application are all discussed in detail.—**The U. S. Stoneware Co., Akron 9, Ohio.**

FENESTRA BUILDING PANELS—Steel and aluminum building panels are described in this 38-p data book. It provides detailed panel-selection tables as a guide to choice of the most economical Fenestra panel for a given span and load. Detail section has been revised to represent current practice. Catalog contains numerous photos of new job installations. Complete descriptions are listed for various wall, deck, and floor panels.—**Detroit Steel Products Co., 3141 Griffin St., Detroit 11, Mich.**

HYDRAULIC HOISTS — Service manual for hydraulic hoists features the use of pictures and brief text to get the information over faster and clearer. This pocket-size manual contains an insert that opens up to 17x24 in. It covers all phases of hoist maintenance and repair, and lists do's and don'ts for most efficient hoist operation.—**Galion Allsteel Body Co., Gallion, Ohio.**

PLYWOOD CONSTRUCTION—Best methods for easy installation of plywood are listed in an illustrated brochure. It describes the erection of room panels, roof and wall sheathing, and interior and exterior grade Weldtex. It also explains the proper use of moldings, Weldwood glue, Firzite, Satinlac, and Westinghouse Micarta. — **United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.**

LUBRICATED PLUG VALVES—Manual is packed with piping, wiring, mounting, and installation data for power-operated lubricated plug valves. Manual V-214 is a complete compilation of technical data covering the use of pneumatic, hydraulic and electric operators for this type of valve. Included are typical piping diagrams, arrangements for both side and top-mounted motor controls, closing speeds, wiring data, and an extensive group of photos of actual installations.—**Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.**

OPEN STEEL GRATINGS—Technical manual describes properties of a line of structural steel footwalks, power-forged and riveted open-steel gratings and treads, Hexteel heavy-duty surface armor, Ganister lining reinforcement meshes, Floorsteel flexible floor armor, open steel and aluminum bridge decking, and Flexsteel flexible open-steel conveyor belt.—**William F. Klemp Co., 6601 S. Melvina Ave., Chicago 38, Ill.**

You'll Save on Gasoline...Repairs ...and "Time Out"

Engineers say: "Worn carburetors result in gasoline waste, expensive repairs and poor engine performance. On heavy duty equipment, carburetors should be completely rebuilt or replaced after 800 work hours."

TAKE this tip from men who know—and make your replacements with Marvel-Schebler Carburetors.

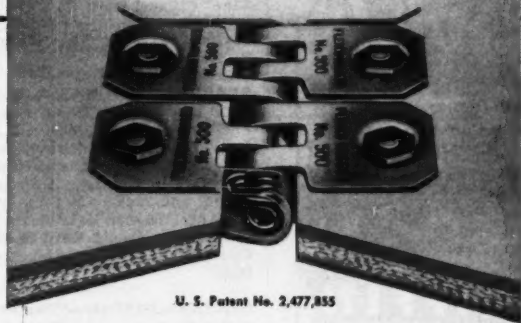
Because of their rugged strength, unusual dependability and economy of operation, Marvel-Schebler Carburetors are original equipment on many industrial engines and tractors.

MARVEL-SCHLEBLER PRODUCTS DIV.
Borg-Warner Corp., Decatur, Ill.

MARVEL-SCHLEBLER CARBURETERS



... the new separable FLEXCO HINGED BELT FASTENERS

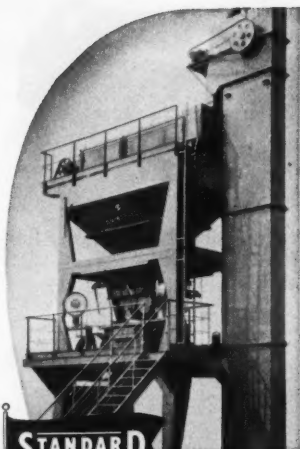


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- ✓ For joining grader, trencher, ditcher and other earth moving conveyor belts.
- ✓ For belts $\frac{3}{8}$ " to $\frac{1}{2}$ " thick.
- ✓ A FLEXCO fastener that is HINGED. Has removable hinge pin.
- ✓ Troughs naturally, operates through take-up pulleys.
- ✓ Strong, durable ... pull or tension is distributed uniformly across joint.

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FORGED-STEEL FITTINGS—Comprehensive catalog describes a complete line of forge nozzles, welding necks, and large-diameter flanges. Also included in this catalog are data covering standards of the Tubular Equipment Manufacturers Assn. "Modern Flange Design," a special publication, is incorporated as a part of Catalog 501.—**Taylor Forge & Pipe Works, Inc., P. O. Box 485, Chicago 90, Ill.**

AERIAL SURVEYS — Two new catalogs are available describing aspects of aerial surveying. One tells how to obtain a resources inventory in under-developed areas. The bulletin tells how the inventory is carried out, how long it takes, how much it costs, and the steps involved. Equipment necessary and the type of information obtained are also described in detail. The other bulletin describes how to obtain fast, economical ground profiles by radar; the techniques involved; the type of information obtained; and the personnel and equipment required.—**Lockwood, Kessler & Bartlett, Inc., 38 E. Bayview Ave., Great Neck, N. Y.**

GLASS HANDBOOK — Data sheet handbook contains detailed information on the complete line of Pittsburgh glass and glass products. It is a revision of a loose-leaf handbook issued in 1947 and includes several important changes. It is a pocket-size book designed for ready reference.—**Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.**

EXPANSION JOINTS — Four-page bulletin (No. 351) describes a complete line of expansion joints, lists sizes, dimensions, suggested applications, and other technical data on a variety of joints. The line ranges from small flexible connectors for diesel exhaust lines to 30-ft-dia self-equalizing joints.—**Zallea Bros., Taylor & Locust Sts., Wilmington 99, Del.**

REAR-DUMP EUCLID — Models 31TD and 53TD 22-ton rear-dump Euclids are the subject of a 16-p catalog folder. Catalog 120 features a description of parts such as the planetary drive axle, transmission, frame, and hoists. It contains complete specification data on the entire series.—**The Euclid Road Machinery Co., Chardon Road, Cleveland 17, Ohio.**

CENTRAL-MIXING—"Twelve Ways to Set Up for Central Mixing" is the name of a new 4-p pamphlet. It is designed to show the economies and production that can be obtained through pre-mixing and delivery of concrete in non-agitating equipment. Twelve different types of central-mixing plants are illustrated and described briefly.—**Dumperette Div., Maxon Construction Co., Inc., 131 N. Ludlow St., Dayton 2, Ohio.**

ALL-WAYS Practical, Versatile, Economical



"KING" Combination Nipple

Outstanding in its advantages over regular iron pipe nipples for connecting all types of hose. Made of non-porous tubular steel, with clean threads and deep, carefully finished corrugations.

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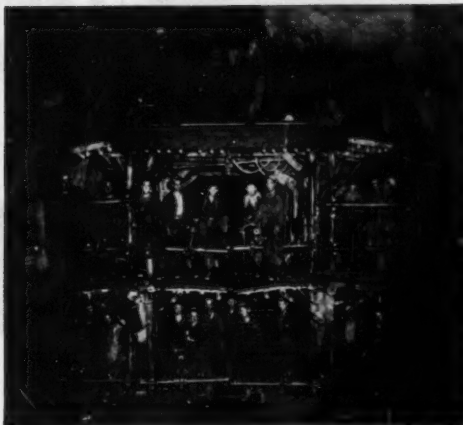


TUNNEL PROFILE—Water develops a static head of 420 ft, rushing downgrade from the dam (right) through two sections of 24-ft diameter horseshoe tunnel and a 15½-ft diameter steel conduit across Willow Creek (center) on its way towards the powerhouse.

Two mountains tunnelled in record time for Southern California power job



HARD HATS AND BRASS HATS—From left to right: Paul Peacock, So. Calif. Edison Co., engineer; "Scotty" Harris, tunnel foreman; Harry W. Morrison, president of Morrison-Knudsen; Carl J. Herslof, tunnel superintendent; James N. Wells, district manager for M-K; and H. L. Leventon, construction manager.



RECORDS SMASHED—Three-story drill carriage mounts thirteen drifter drills. In the 2400-ft section the crews set a record of 222 ft advance in a 6-day week. This record was twice broken in the 8108-ft tunnel where advances of 227 and 241 ft were achieved.

Bored through granite at a fast pace that smashed three records, two 24-ft diameter power tunnels have been completed at Big Creek Project No. 4 in the foothills of the Sierra Nevadas, about 55 miles northeast of Fresno. Mountain water, dammed and diverted into this tunnel system, will spin generators to the tune of 84,000 kw for this region of zooming growth. Part of Southern California Edison Company's record construction program, this project forges a sixth link in the chain of hydro-electric power plants operated by this utility on the San Joaquin River and Big Creek, a tributary.

The drilling crews established what are believed to be new records for large-diameter tunnels when

they advanced 222 ft during a 6-day week in December, 1949. This record was shattered in January, 1950, with 227 ft of advance; and in March, a new figure of 241 ft was chalked up: an average of 40.2 ft per day, working three shifts.

Using 3½-inch drifters and 2-inch carbide insert bits, the contractors pounded in an average of 94 holes of 12-ft depth each round. Used in 4-ft changes, the drill steel was kept in shape by the well-equipped blacksmith shop at the Willow Creek portals. Most of the rods on this job were made up from 1¼-inch Bethlehem Hollow Drill Steel. The top quality of this

reliable steel was equal to the record pace of this new chapter written into tunnel-driving history.

Big Creek Project No. 4 for Southern California Edison Co. is a joint venture of Bechtel Corp. and Morrison-Knudsen Co., Inc., with Bechtel as overall sponsor and M-K as sponsor of dam and tunnel construction. J. R. Kistly of Bechtel Corp. is general manager; H. L. Leventon, construction manager; Carl J. Herslof, tunnel superintendent; John L. Armitage, dam superintendent—all of Morrison-Knudsen.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

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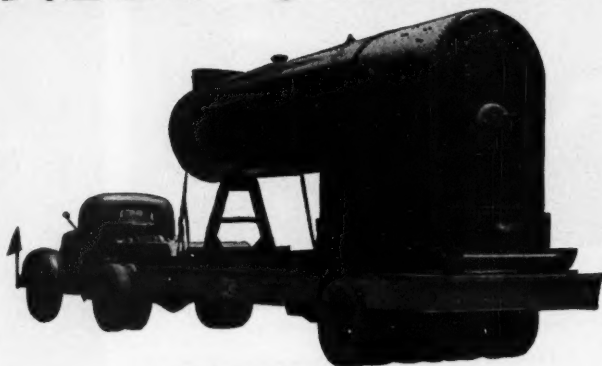
ROLLER CHAINS; SPROCKETS—Catalog RS-50 covers a complete line of roller chains and sprockets carried as stock items. It provides complete specifications and engineering reference tables on American standard roller chains, sprockets, and attachments. Dimensional data, strengths, and weights are supplied for allied products, such as block chain, cable chain, and flexible couplings.—**Whitney Chain Co., 222 Hamilton St., Hartford 2, Conn.**

LIGHTWEIGHT AGGREGATE—Properties and characteristics of lightweight, cellular Waylite aggregate are listed and described in this 16-p catalog. A feature of the catalog

is an illustrated description of construction details for all types of buildings. Installation data and pertinent engineering tables are included.—**The Waylite Co., 105 W. Madison St., Chicago 2, Ill.**

FORESTS AND WOOD SUPPLIES—Comprehensive brochure presents an interesting story of forests and wood growth and use. It contains information on various terms used in describing wood; lists the trend of the nation's wood supply; and discusses the various factors involved in maintaining an ample wood supply.—**American Forest Products Industries, Inc., 1319 Eighteenth St., N. W., Washington 6, D. C.**

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LUCEY 104 H.P. 150 and 250 lb. W.P.
Skid mounted with 24" oil burning base.

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1. 1040 sq. ft. heating surface.
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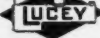
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COMPARATIVE HEATING COSTS

—Chart provides a yardstick for determining comparative costs of fuels used for heating dwellings. It takes into account the common differential factors and is applicable wherever automatic heating equipment is used. Fuels listed are anthracite coal, oil, manufactured gas, and natural gas. The chart is based on data in the University of Illinois Small Homes Council Bulletin G3.5—**Anthracite Institute, 101 Park Ave., New York 17, N. Y.**

DIESEL-ENGINE MAINTENANCE

—Protective maintenance for diesel engines is outlined in a new service bulletin which discusses the purposes and advantages of protective-maintenance, tells how to determine the maintenance schedule, and lists five reasons to show how a maintenance program reduces operating expense. A typical maintenance-schedule sheet is shown on the last page of the bulletin.—**Cummins Engine Co., Inc., Columbus, Ind.**

WALL FORMS—Eight-page catalog is a revised directions booklet on use of wall forms. Complete details are listed for erection of the forms including panel alignment, stripping, spacing of ties, safe work load for ties, and pressures that forms will stand. Information is included on how to obtain the best performance and longest use of forms. Illustrated information is included on available accessories.—**Symons Clamp & Mfg. Co., 4281 Diversey Ave., Chicago 39, Ill.**

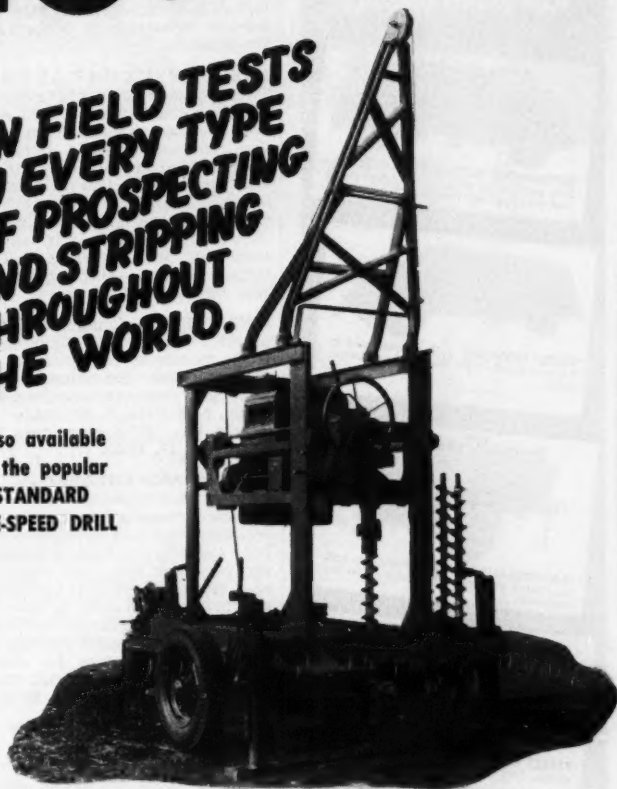
MOTORTRUCK OPERATION—The Bureau of Public Roads has published "A Factual Discussion of Motortruck Operation, Regulation, and Taxation." This 113-p bulletin presents in summary form the records and other data available to the Bureau. Subjects covered include: Growth in registration and use, effects on design and capacity of highways; effects of axle loading; weight and its effect on bridges; highway-user tax payments in relation to highway revenues and expenditures; and allocation of highway tax responsibility. Bulletin costs 30¢.—**Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.**

RUST PREVENTIVES—Chemically inhibited coatings designed to prevent metal loss under most corrosive conditions are described in this 8-p bulletin. Information includes: Selection of the proper No-Ox-Id product; general recommendations according to degree of protection required; cleaning of metal surfaces prior to coating; general description of four types of No-Ox-Ids; and detailed information about specific consistencies available in the four types.—**Dearborn Chemical Co., 310 S. Michigan Ave., Chicago, Ill.**

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IN EVERY TYPE
OF PROSPECTING
AND STRIPPING
THROUGHOUT
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For heating and melting asphalt, pitch and all types of bituminous materials. Welded all-steel construction.

JOINTS AND FITTINGS—Complete line of pipe joints and fittings is listed in this 4-pager. It describes the Style 38 couplings in detail listing features of construction and installation. Installation procedures are listed step-by-step with photographs showing proper procedure. Compression fittings for permanently tight flexible joints for small piping are also described in detail.—**Dresser Mfg. Div., Dresser Industries, 21 Fisher Ave., Bradford, Pa.**

BAY CITY EXCAVATORS—Twenty-page catalog illustrates and describes the Bay City ¾-yd series crawler-mounted shovel, crane, dragline, clamshell, and hoe. It features a description of the heavy-duty design and construction of this convertible machine for excavating, erecting, and material handling. Machinery assemblies, parts, and attachments are illustrated and described in detail.—**Bay City Shovels, Inc., Bay City, Mich.**

LIFT TRUCKS—Comprehensive application data on four Steubing lift-truck models is contained in data sheets listing dimensions, dimensional drawings, capacities, and operating performance figures. — **Lift Trucks, Inc., 2425 Spring Grove Ave., Cincinnati 14, Ohio.**

BLOCKS AND SHEAVES — Complete line of wire-rope blocks and sheaves is described in this 24-p catalog. Information includes block number, capacity in tons, number of sheaves, rope size, and weight of each block. A section is included on how to figure line parts, in which are illustrations, ratio tables, and formulas designed to make reeving and line-part figuring easy for riggers. —**American Hoist & Derrick Co., 63 S. Roberts St., St. Paul 1, Minn.**

VIBRATORS—Bulletin 511 (8 pp) describes features of the Stow concrete vibrators. The complete line is listed in detail explaining specific uses and specifications of each model. Other data cover flexible shafting; vibrator heads; accessories; and a description and specifications of the Stow vibrating screed.—**Stow Mfg. Co., Binghamton, N. Y.**

SNOW-MELTING SYSTEMS — A study of 50 snow-melting systems has been compiled in a 36-p bulletin entitled "Byers Wrought Iron for Snow Melting Systems." The bulletin traces the growth of these systems, and contains 83 illustrations, mostly showing the systems either operating or being installed. Eight piping layouts for a variety of installations are included. Text covers: Design, piping properties, use of anti-freeze, paving design and fill, fabrication and installation, installing and operating costs, operating practices, controls, and auxiliary units. —**A. M. Byers Co., 6th & Bingham Sts., Pittsburgh, Pa.**

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**America's
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A reliable working guide that covers every element to be considered in bidding for a construction job. It includes step-by-step procedures for computing accurate estimates on concrete work, steel, electrical installation... any kind of construction you're apt to meet in modern building plans. Practical examples of estimates worked out in detail demonstrate how to apply the methods outlined.

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6 CLYDE *portable* BUILDERS TOWERS


THE E & F CONSTRUCTION CO., INC.
OF BRIDGEPORT, CONN. U.S.

on the PHINEAS T. BARNUM HOUSING PROJECT

To LOWER material handling costs and SPEED construction

Where material handling costs are a large factor the preference is for Clyde Portable Builders Towers! No more costly timbers! No more wasted labor in erecting and dismantling! No more costly delays! With a Clyde Portable Builders Tower two men easily assemble the 10 foot tower sections while on the ground and raise it into operating position with its own hoist. It is ready to go . . . cutting costs on all material handling work. A safety brake, a 2,000 lb. capacity tower derrick and 1/2 yard concrete hopper bucket are optional equipment you'll want to investigate! And remember, costs come down when Clyde Portable Builders Towers go up!

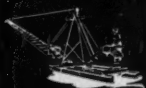
Here's double economy: One Clyde Portable Builders Tower supplies materials to two buildings by means of short runway at floor level height.



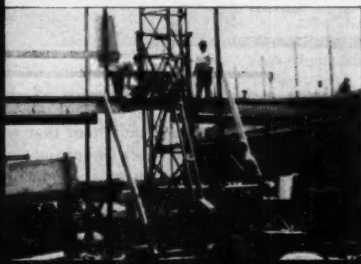
Tower may be loaded on truck or towed on trailer wheels which attach to tower base.



Tower is quickly and easily assembled, and cable reeved while tower is on the ground.



Tower hoist quickly and easily raises tower into position. No outside crane is needed.



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BUILDERS TOWERS - CAR PULLERS



COMMENT

from the
BUTLER ENGINEER

June, 1951

"No! No! Senor!" (Spanish For "No Soap!")

Even though I'm a conservative engineer, I can think of only one word to describe a Butler Ready Mixed Plant erected in Havana, Cuba: "Terrific!"

That plant had everything - including - so help me, a mahogany floor for the batching platform. It was erected right in the middle of downtown Havana. Concrete yard and approaches. "Magnifico, senores!" Came the great day of the formal opening. Flags flying. Airplanes roaring overhead. Crowds cheering. Everything ready for the push-button ceremony to start the plant. Suddenly came word from the city authorities. "No. Nix. Positively not. No Ready Mixed Plant in downtown Havana!" So you think you got troubles?

Well, here's the happy ending. The city bought the land, paid for dismantling and re-erecting the plant. And paid for the new site, too!

Writing of the tropics reminds me of the Arctic. Butler's there, too. A complete Butler Road-builders Plant shipped north by rail until the tracks ended in a snow drift. After that it was "weasled" across the snow and ice way up beyond the Arctic Circle. Just in case you don't know - and I didn't - a "weasle" is a snow going jeep. Operates on a crawler track. Speaks well for portability in Butler design, doesn't it?

And the only Ready Mixed Plant in England is a Butler, too. It's a great attraction. In spite of austerity and gasoline shortages, Britons come from all over the country to watch it. They're used to 3 and 6 bag mixers - some as much as 50 years old.

See you in August,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

BASIC TRAILER MODELS—A 52-p metal-bound catalog details the 29 basic Fruehauf trailer models. Special features listed include the Multi-Rate single axle and the Gravity-Tandem suspensions and under-constructions. Specifications and features are listed for all models. —Fruehauf Trailer Co., 10940 Harper Ave., Detroit 32, Mich.

JAW CRUSHERS—Construction and operating data for jaw crushers are contained in this 8-pager. Data presented cover: Selection of the primary crusher; crusher capacity which determines operating profit or loss; pitman and jaws; jaw adjustment; bearings, and care and lubri-

cation. A complete list of specifications and general data, and a table of capacities, complete the catalog. —Diamond Iron Works, Inc., 1766CM N. 2nd St., Minneapolis 11, Minn.

LIFT TRUCK ATTACHMENTS—Special engineering folder (4 pp) illustrates the many devices designed to grip, clamp, grab, or support almost any type of load. These attachments for use on fork-lift trucks can be used to load, lift, transport, unload, deposit, dump, up-end, or revolve many types of products. The folder pictures and explains the purpose of each device. —Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.



Shown in operation here is the H & B Moto-Paver purchased by Middlesex County, Canada, for use in resurfacing old concrete roads and streets. Moto-Paver does the complete mixing and laying job—in one continuous operation.

Resurfacing costs cut approximately 50%

In these days of increasing costs, equipment that will save money is certainly worth investigating. Middlesex County, in Canada, investigated the Moto-Paver and decided to use it on their 1950 road resurfacing program. When the program was completed it was found that the costs were approximately 50% lower than they would have been if the work had been done by conventional methods.

We make no claims that Moto-Paver will save you 50% on your resurfacing costs. But we do say—based on Moto-Paver performance records under all kinds of conditions, that no other machine or method produces comparable results at comparable cost.

Bulletin MP-49 will be sent on request.



HETHERINGTON & BERNER INC.
Engineers—Manufacturers
735 KENTUCKY AVENUE
INDIANAPOLIS 7, IND.

TRUCK MIXERS—Bulletin covers the complete line of Rex Hi-Discharge Moto Mixers. Improvements described in detail include the chain-drum drive system, drop-forged and flame-hardened drum rollers, locomotive-type drum track, re-located water pump, spouting equipment, and lighter-weight frame. — **Chain Belt Co., Dept. PR, 1664 W. Bruce St., Milwaukee 4, Wis.**

GRATINGS—Aluminum gratings for flooring, stair treads, bridge decking, walkways, and catwalks are described in this 4-p bulletin. Typical cross-sections, with dimensions, of the various styles in which these gratings are produced are illustrated. Specifications listed cover safe loads, standard panel widths, and standard grating weights. — **Irving Subway Grating Co., Inc., 5063CM 27th St., Long Island City 1, N. Y.**

DIESEL ENGINES — Heavy-duty diesels for all types of haulage units are listed in 12-p Bulletin 1526. Outstanding features are listed with special emphasis on Dyna-Swirl, a mono-lobe low-pressure-rise combustion system. Specifications are listed for engines ranging from 185 to 350 hp. On-the-job photos coupled with short case histories illustrate typical applications of these diesels. — **The Buda Co., Harvey, Ill.**

CONCRETE-PIPE GASKETS—Engineering specifications for Hexseal rubber gaskets for reinforced-concrete sewer pipe are contained in a 4-p brochure. Subjects covered include: Type of pipe, dimensions, pipe design, steel reinforcement, concrete, water curing, steam curing, curing compounds, and curves. A special section discusses installation instructions. — **Universal Concrete Pipe Co., 297 High St., Columbus, Ohio.**

MAGNESIA INSULATION — Model specifications covers 85% magnesia insulation for heating systems. Requirements for related materials used are also discussed. Schedules of insulation thicknesses for piping and equipment are listed for temperature ranges up to 600 deg. — **The Magnesia Insulation Manufacturers Assn., 1317 F St., N. W., Washington 4, D. C.**

MOLDED TERMINAL BLOCKS—Solderless-type Bepco molded terminal block is described in a 1-p bulletin. A special feature described is that this block eliminates wrapping wires around studs or applying terminal to wire ends. The data sheet lists typical combinations that can be accommodated by a single terminal, and describes other features. — **Buchanan Electrical Products Corp., 1290 Central Ave., Hillside, N. J.**



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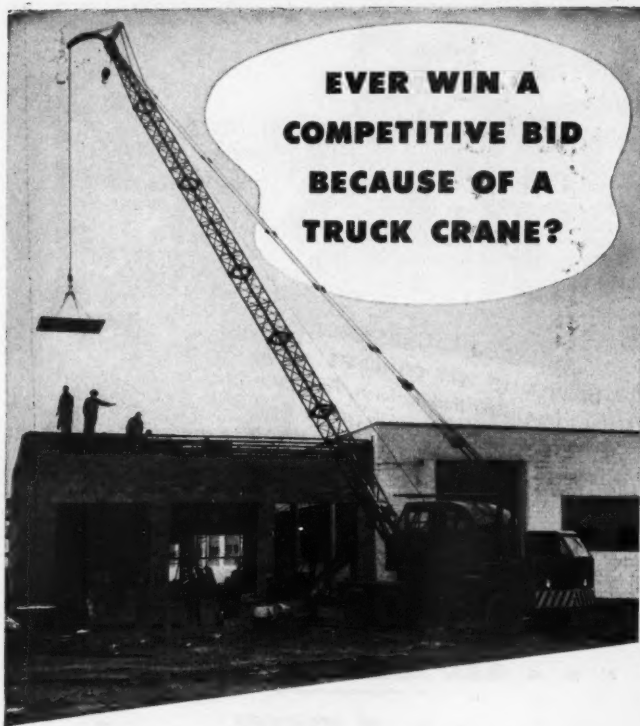
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Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN's compact size and maneuverability, planned to work from a central point inside the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

MICHIGAN POWER SHOVEL COMPANY
495 Second Street, Benton Harbor, Michigan, U. S. A.

PRECISION INSTRUMENTS — A complete line of instruments for engineers and surveyors is listed in Bulletin 1051. A special feature of this new bulletin is a description of the advantages of coated lenses. A complete description is given for each instrument and accessory in the line.—David White Co., 343 W. Court St., Milwaukee 12, Wis.

PLASTIC-FACED PLYWOOD—Catalog is designed as a reference manual for plastic-surfaced plywood. It describes types of plastic-surfaced Douglas fir plywood, properties of the overlay panels, and lists applications in construction and industry. Recommendations are included for use of a new premium-surface panel material that combines the properties of fir plywood and plastics.—Douglas Fir Plywood Assn., Tacoma Bldg., Tacoma 2, Wash.

ARC WELDING — History of the oxyacetylene flame is traced in this 16-p illustrated booklet. Written in easy-to-understand language, it explains uses of the oxyacetylene flame in cutting, welding, and heating operations. Specialized uses, such as hard-facing, flame-softening, flame hardening, powder cutting, and steel conditioning, are briefly described.—Linde Air Products Co., Div. Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

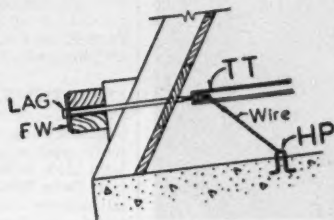
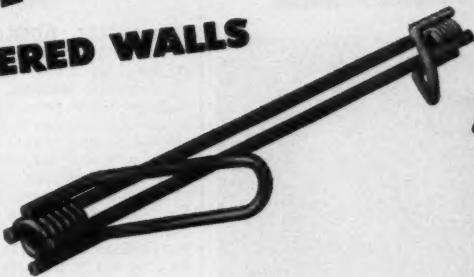
ROOF MAINTENANCE — Brochure entitled "Solving Roof Problems" thoroughly explores the subject, and discusses in detail: Types of roofs, how they are built, factors that enter into their deterioration, and how roof troubles can be diagnosed and treated. For easy reference, the booklet is divided into 15 sections and includes a table of contents.—The Tremco Mfg. Co., 8701 Kinsman Road, Cleveland 4, Ohio.

ROTARY MASONRY DRILLS—Features and advantages of the Termite concrete drills are listed and described in this small-size folder. Featured is a description of the specially designed Wictu inserts for penetrating concrete at high speeds. The folder lists all sizes in which the Termites are available. Also described are the core Termites for drilling larger holes.—Termite Drills, Inc., 2091 Foothill Blvd., Pasadena 8, Calif.

WALL-TILE INSTALLATION — Handy hints on installing wall tile are contained in Bulletin P7. It tells how to obtain maximum coverage from the cement; how to use plastic extruded outside corner pieces; and how to make straight or diagonal cuts of plastic tile. Also included are tips for fast and easy clean-up.—Hachmeister, Inc., 2332 Forbes St., Pittsburgh 13, Pa.

THIS TIE DOWN TYSCRU PREVENTS UPLIFT ON BATTERED WALLS

The Richmond Tie Down Tyscru offsets any tendency towards uplift of the form where construction is off the perpendicular. It is a standard 2-strut Tyscru with a 45° Tie Down Loop at one or both ends. The loop is wired to a Hairpin or Ty-Loop imbedded in the footing. Particularly useful where extreme batter tends to cause an uplift in the form.



PIPE THE BABE—
WILL 'YA—
WHAT A SHAPE!

OH BOY! IT WOULD
SURE BE A
SHAME TO TIE
THAT DOWN.



Get your "Screw" or "TY"
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Yes, here's the quick and simple way to install underground pipe. With a GREENLEE Hydraulic Pipe Pusher one man pushes pipe under obstacles. No tearing up of pavement, lawns, floors... eliminates extensive ditching as just a short trench accommodates the Pusher. No tedious tunneling, back-filling, tamping, or re-paving. Job time is cut to a fraction. Pusher often pays for itself through labor savings on the first job or two.



No. 700 GREENLEE PUSHER
For 3/4 to 4-inch pipe. Six Speeds—
6,500 to 40,000 lbs. pushing pressure



No. 705 GREENLEE PUSHER
For pipe larger than 4-inch, concrete
sewer pipe, large drainage ducts.
Six speeds—25,000 to 150,000 lbs.
pushing pressure.



POWER PUMP for both sizes of
GREENLEE Pushers. Pushes pipe at
rate of two feet per minute.



Get facts on timesaving Greenlee tools now. Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2186 Columbia Avenue, Rockford, Illinois, U. S. A.

ATHEY PRODUCTS — Condensed pocket-size catalog shows all the products or variations made by Athey. It provides immediate reference and eliminates the necessity for referring to files or catalogs. Featured is a spread of photos showing Athey equipment used during World War II.—Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

CLAMSHELL BUCKETS—Bulletin contains 42 pp of practical and useful information on maintenance and care of clamshell buckets. Included are suggestions on proper use and a list of common abuses to be avoided. A special section covers bucket lips—what makes them bend in or out; how to straighten distorted lips; instructions for repairing fractures; hard-surfacing cutting edges; and rebuilding worn cutting edges. Reeve instructions and practical tips on prolonging cable life are included, as are diagrammed instructions for replacement of component parts.—Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.

ELEVATED-TANK CONTROLS—Pressure-operated pump controls for elevated tank systems with two or more pumps are described in Bulletin 1210. A description of the Autocon Twin Bellows design and the advantages claimed for it are featured. A detailed, illustrated description shows the sequence of operation.—Automatic Control Co., 1005 University Ave., St. Paul 4, Minn.

CONCRETE CURBS—Construction of concrete curbs on existing slabs without drilling holes through the pavement is described in a 4-p folder. Bulletin 151 describes and illustrates Pacific clamp set-ups for all standard curb jobs, and also shows special applications. Typical installations are illustrated.—Pacific Engineering Sales Co., 215 W. 5th St., Los Angeles 13, Calif.

WELDING DESIGN MANUAL—Third printing of "Manual of Welding Engineering and Design" is now available. This edition contains additional information including: Joint preparation by electric arc; additional design information; comparative data; 1951 welding alloy developments; chemical welding aids developed within the last year; and items of new procedural information.—Eutectic Welding Alloys Corp., Dept. P, 40-40 172nd St., Flushing, N. Y.

SHOVELoader—Bulletin describes applications and advantages of the Lull Shovel loader. It contains an illustrated list of 18 factors to consider in selecting this type of equipment and 63 features claimed for the Shovel loader.—Lull Mfg. Co., 3612 E. 44th St., Minneapolis 6, Minn.

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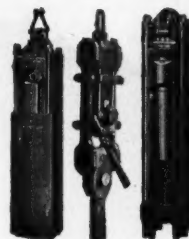
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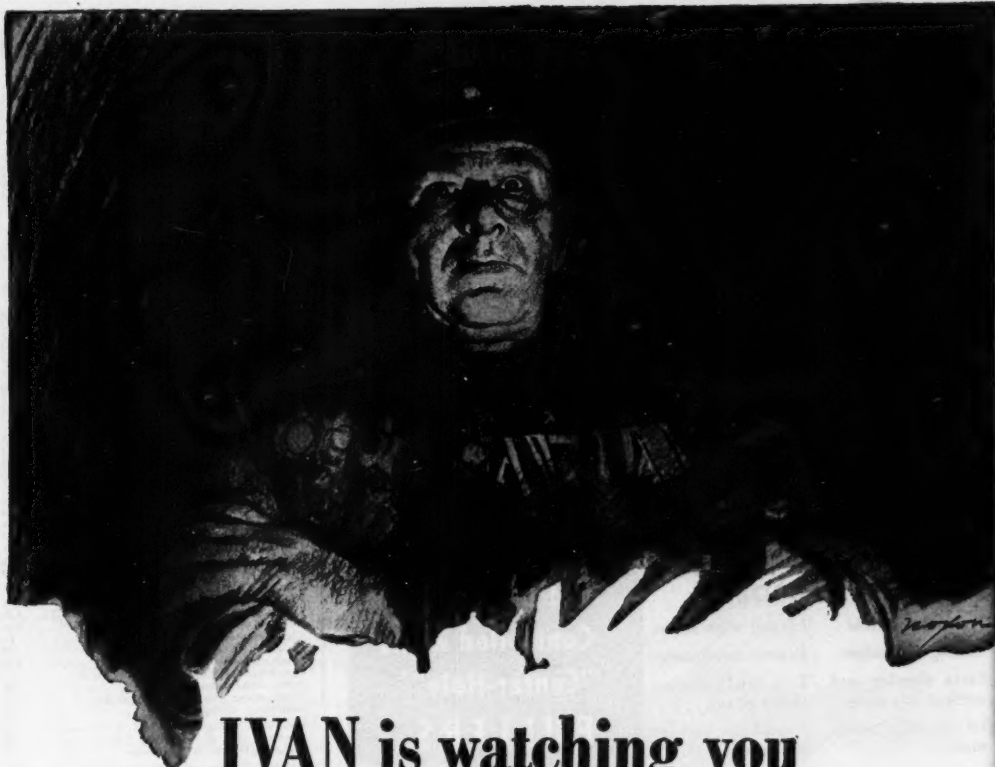
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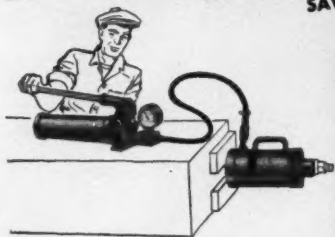
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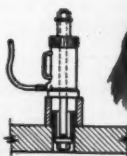
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*On Rams of 30-tons or greater capacity

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Bulletin: Hydraulic 51
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STOP that WATER

WITH FORMULA NO. 640. A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1500 lbs. per sq. ft. hydrostatic pressure. Costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample. Haysco Products Co., Omaha, Neb.

Now Available for Crane and Equipment Mounting

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**TRUCK PERFORMANCE
WITH "FACTORY-PROCESSED"
NEW-GUARANTEED 6x6's**

"Factory-Processed" trucks from Zeligson are the cream of the Army Surplus trucks that were preserved in Government storage. Chassis and engine are completely disassembled in our modern shops by skilled mechanics and technicians; and the complete truck is reassembled to factory specifications.

Like many other contractors you will discover that only **TANDEM ALL-WHEEL-DRIVE** trucks will insure greater **DEPENDABILITY** on the highway or in the field, despite terrain and weather conditions which cause delays with single-drive equipment.



International 6x6 with 361 cu. in. Red Diamond engine, 5-speed Fuller transmission, Hendrickson tandem, 8.25x20 M & S tires.



Diamond-T 6x6 with 529 cu. in. RAC Hercules engine, 5-speed Clark transmission, Timken tandem, air brakes, 9.00x20 M & S tires.



GMC 6x6 with 270 cu. in. GMC engine, 5-speed Clark transmission, Timken tandem, 7.50x20 M & S tires.



NM Mack 6x6 with 707 cu. in. thermodyne engine, 5-speed Mack transmission, Timken tandem, air brakes, 10.00x22 M & S tires.

Half cabs are available on above trucks for crane mounting.

WRITE FOR LATEST COMPLETE
MILITARY PARTS CATALOG

ZELIGSON
TRUCK and EQUIPMENT COMPANY
801 E. ADAMS PLACE TOLLA, OKLAHOMA

SCHIELD "BANTAM" CRANES
AND OTHER CONSTRUCTION
EQUIPMENT.

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(Classified Advertising)

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EQUIPMENT
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DISPLAYED

Individual Spaces with border rules for prominent display of advertisement. The advertising rate is \$11.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request. An advertising inch is measured 1/8" vertically on one column, 3 columns—30 inches—to a page. New Advertisements received at the New York office by June 22nd will appear in the July issue. C.M.

FACTORY CLOSE OUT CRITICAL MATERIAL

BRAND NEW
PORTABLE
MULTI-USE
POWER
SAW

SALE!

ORIG.
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SAVE
\$300

WAS \$499.00

NOW \$199.00

FOR MINNEAPOLIS, MINNESOTA

CUTS
WOOD
CUTS
BRICK
CUTS
CONCRETE
CUTS
METAL

America's greatest saw bargain! Cuts lumber to 4" thick. Briggs & Stratton 3 1/2 H.P. gas engine. Saw cuts flue lining, transite pipes, steel sheets, copper & aluminum, etc. Does work of \$1,000 worth of saw equipment. Sharpens tools. Famous make, brand new, original crates. Limited supply. Send for literature. Dept. C-6

AT 1281

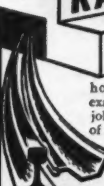
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334 1st St. N., Minneapolis 1, Minn. U.S.A.

"FASTER FROM FOSTER"

RAILS NEW AND RELAYING

RENTAL PILING
STEEL SHEET



Five complete warehouse stocks assure you of the exact requirements for all your job needs. Largest stocks in U.S. of Relaying Rails and Rental Steel Sheet Piling. Also complete Track Accessories, Pile Hammers and Extractors for rent. Write for Catalogs.

TRACK ACCESSORIES • PIPE • WIRE ROPE

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ENGINEER. With seven years experience in mining industry wants responsible technical or supervisory position in California or the Southwest. PW-9727, Construction Methods & Equip.

ANYTHING within reason that is wanted in the field served by Construction Methods & Equipment can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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for the Construction Field

Construction men seeking employment and employers in search of talent will find PURKISS PERSONNEL the perfect agency for joining skill to opportunity. We are serving major projects here and abroad.

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Chickering 4-4084

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Motor Truck Cranes 20 ton capacity
2-Bay City—1 Lorain
100 foot boom—15 foot jib
Semi Trucks—Winch Trucks
Derrick Trucks—Low Boy Trailers
Air Compressors—Portable Welders

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5002 S. Hanna St., Ft. Wayne, Ind.
Phone H-2955

2—S&B Ingersoll-Rand Jackhammers for 1 in. hex steel

1—Ingersoll-Rand No. 34 Drill Sharpener with shanking tools. Bit punch for sharpening 1 in. hex steel.

Subject to prior sale

METAL & THERMIT CORPORATION

John W. Adams, Agent

ROSELAND, NELSON CO., VA.

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**FOR PROFITABLE PERFORMANCE
ON ANY ROADWAY JOB
A BAY CITY MODEL 59**

Owners and operators everywhere, like the Norristown Hauling Company of Norristown, Pa., have found that they get more power . . . more weight . . . more stability and more work done every day with a big BAY CITY one-yard convertible shovel. Look at the "59" at work in the above photo. Look at the rugged construction . . . look at its size (it's really a modified 1¼ yard machine) . . . look at the many outstanding BAY CITY features and you'll see why you get higher performance at lower operating costs with a BAY CITY Model 59. See your nearest dealer or write us for full facts. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.

- ✓ CHECK LIST
- ✓ Fully Convertible
 - ✓ Long, Wide Crawlers
 - ✓ Alloy Cast Bases
 - ✓ Tandem Drums
 - ✓ Power Booster Clutches
 - ✓ High Line Speeds
 - ✓ Wide Vision Cab
 - ✓ Pin-Connected Boom

This positive acting swing lock is just another example of thorough BAY CITY engineering on even the smallest details. The lock securely holds the machine from swinging when being transported or when moving on the job. It can be engaged with the cab in any position and has full 360° range.



185



BAY CITY



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Methods Memo . . .

THAR'S GOLD in them thar diggings—and thar's an excavation job that can be made to pay off. In excavating 15,000 cu yd for the pressroom of the new Rocky Mountain News along Cherry Creek in Denver, The Austin Company finds the quartz sands assay \$1 per yd in gold. W. J. McMullen, Austin's superintendent, made the discovery and sluiced a few panfulls of the sand to the frantic cheering of sidewalk superintendents. What to do? Should he make a big profit on the job by panning the entire 15,000 yd? Good idea, but the News wants to go to press soon in its new plant, so McMullen reluctantly quit mining and went back to superintending. "After all," he said, "we don't need any more of the yellow stuff. There is more than a billion dollars worth across the way in the U.S. Mint."

WE ASKED Homer Campbell, the able equipment service manager and sage who contributes regularly to our monthly feature, **THE MAINTENANCE SHOP** (on page 77 of this issue), to send us a photograph of himself. The result's below. Homer writes, "The story of the horse and rider is a sad tale of the Old West. It is a story of war and death. And had the latter not occurred, I probably would be drawing parity payments from the government for something or other I didn't do. However, it is history, and I am too damn busy now to feel badly about it. Besides, the fishing wasn't too good up there anyhow."

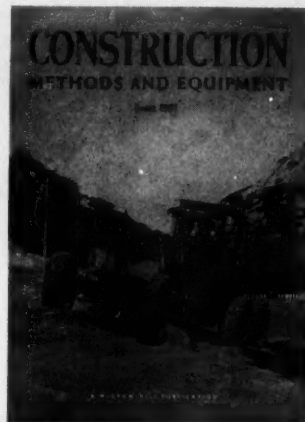
Now the fact that Homer's too busy repairing mistreated construction machinery (and most other service shops are in a similar fix) doesn't speak well for the manner in which some contrac-

tors take care of their equipment in the field. Machines in the shop aren't making money for the contractor, to say the least, and most of the rigs wouldn't be in there if they were given proper preventive maintenance. The subject is of such importance, particularly in these times of growing equipment and parts scarcities, that next month we publish our Third Annual Equipment Maintenance Issue. Among other things, it will show how some of the most successful contracting firms in the country are handling their equipment servicing problems, and it will show you how to make a preventive maintenance program pay off in your own outfit. Maybe then Homer will have time to tell the sad tale of the Old West and of how he switched from horses to machines. But, after looking at his picture, what we want to know right now, is "How the devil do you grease that rig, Homer?"

LATEST VENTURE for R. C. LeTourneau Inc. is a rolling mill at Longview (Tex.) to produce 1,000 tons per day of needed steel plate up to 144 in. wide. LeTourneau is building it with their own forces and is making equipment such as electric furnaces, ladles, run-out tables and manipulators (but not the four-high reversing rolling mill) in their plants. First steel plate, 250 tons per day, will be rolled four months from now.

MANY BIG CONTRACTORS are aviation minded, but none is more so than W. D. and Rufus T. Amis, Jr., brother-partners of W. D. Amis Construction Company, Oklahoma City. They have

each long been flying their own planes, and a third ship belongs to the firm. But that isn't enough—they have organized a company to build a brand-new design airplane, the Aero Commander, a 2-engine job that promises to be a contractor's dream ship. It's good—so good, in fact, that recently they flew the hand-made prototype, fully loaded, non-stop Oklahoma City to Washington on one engine, take-off and all, with one propeller entirely removed. Their plant is now tooled up and planes are rolling through the assembly line.



On the Cover . . .

No, it's not a highway blading job that this 100-hp Galion diesel motor grader is on, but rather a backfilling operation for a pipeline in Utah. Despite rough terrain over the entire 30-mi length of the job, making it one of the toughest assignments ever given motor graders, two of these Galion machines handle the work speedily and efficiently for Enoch Smith Sons Co., Salt Lake City, contractor for the \$1,600,000 cross-country pipeline job.

The pipeline, a 20-incher, will carry natural gas from Coalville to Salt Lake City for the Mountain Fuel Supply Co. In its 30 mi, the line goes directly across some of the most mountainous country in that area. Elevation of the pipe ranges from 8,500 ft down to about 4,000 ft, and most of the ground is either rocky or filled with large boulders. All these features conspire to make it a challenging and tricky pipe-laying job from beginning to end.





Masterbuilt Floor in Hinde & Dauch Paper Co. Box Plant, Richmond, Va. Archt.—Carneal & Johnston; General Contr.—Doyle & Russell—both of Richmond, Va.; Floor Contr.—The Vannier Co., Buffalo, N. Y.



4-6 Times Longer Floor Life with the MASTERPLATE "Iron-Clad" Concrete Floor

The good performance of Masterbuilt iron armored concrete floors in two other Hinde & Dauch plants resulted in the company's decision to install this modern industrial floor in the fine new plant shown above.

Long floor life — 4 to 6 times greater than the best plain concrete floor — is only one of the reasons why many million square feet of Masterplate Floors have been installed in plants of all types during the past twenty years.

In addition to great wear resistance, Masterplate Floors have the following advantages:

- SPARK RESISTANT†
- STATIC DISSEMINATING†
- NON-SLIP FINISH
- NON-DUSTING
- EASY-TO-CLEAN
- CORROSION RESISTANT
- BUILT-IN-COLOR — NON-COLORED AND 11 ATTRACTIVE COLORS
- LOW COST

† spark-safe floors with 1.0 to 1.25 lbs. Masterplate per square foot of floor.

These advantages of the Masterplate Floor result from the *thick* iron-concrete armorplate produced by embedding specially processed, size-graded iron particles, combined with Master Builders' cement dispersing agent, in the *surface* of concrete while still in a plastic condition.

Ask for full information and pictorial directions on Masterplate for new floors and resurfacing old concrete floors; also free floor survey.

the

MASTER



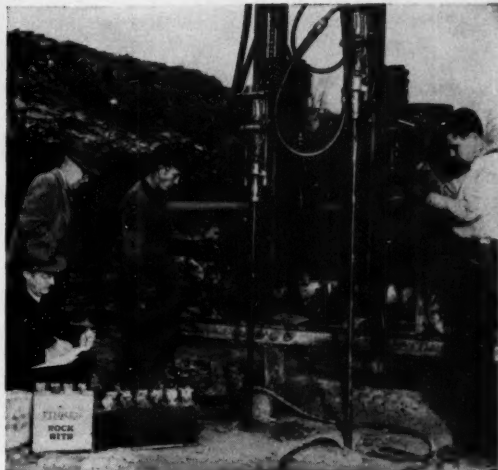
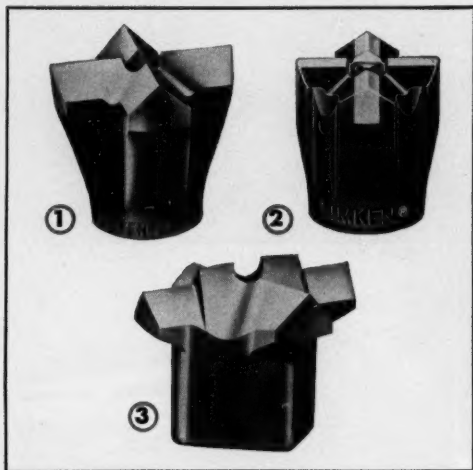
BUILDERS

Co

CLEVELAND 3, OHIO

TORONTO, ONTARIO

Only the Timken Company offers all 3 rock bit types...



and a complete engineering service

1 MULTI-USE. Basic removable rock bit for 18 years. Gives lowest cost per foot of hole when full increments of the steel can be drilled and when all bits are returned for reconditioning. Low cost.

2 CARBIDE INSERT. For extremely hard and abrasive ground, small holes, extra deep holes. Lets drillers spend more time drilling—less time changing bits. Holes go down faster. Bit reconditioning is simplified.

3 ONE-USE "SPIRALOCK". For use where reconditioning is impractical or undesirable. Offers lowest unit bit cost. New "Spiralock" union holds bit dependably—permits easy removal. Simplifies steel preparation.

The Timken Company's Rock Bit Engineering Service is always ready to help you with your rock

bit problem and to help select the right bit for your job. With more than 17 years' experience and *all three* rock bit types to choose from, our Rock Bit Engineering Service can assist you in getting the bit performance you need—whether it's lowest cost per foot of hole, lowest unit bit cost, greatest possible drilling speed, or any other desired advantage.

No other company offers this complete service. Because only the Timken Company makes *all three* rock bit types, our engineers can give you an unbiased recommendation as to the best bit for your job. And no other manufacturer of rock bits has had as much drilling experience in mining, quarrying and construction as the Timken Company. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, O. Cable address: "TIMROSCO".

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